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NEUTRON REFLECTION AND FLUX VERSUS DEPTH FOR CONCRETE

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RDT & E Project No. 1A022601A086

BALLISTIC RESEARCH LABORATORIES

ABERDEEN PROVING GROUND, MARYLAND

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FOREWORD

This is the first of a series of reports, each one of which presents calculated results for neutron reflection and flux versus depth for a single material. In each case eight incident energies: 0.1, 0.25, 0.5, 1.0, 2.0, 3.0, 5.0 and 14.0 MEV and four incident angles for each energy: 0, 30, 45 and 70° are considered. Materials which will be treated in the series of reports include concrete (present report); Nevada Test Site soil dry, 50% saturated and 100% saturated; iron; and water.

B A L L I S T I C R E S E A R C H L A B O R A T O R I E S

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FJAllen/AFutterer/WWright/jdk
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NEUTRON REFLECTION AND FLUX VERSUS DEPTH FOR CONCRETE

ABSTRACT

Detailed calculated results on neutron reflection and flux versus depth for concrete are given in the form of machine printouts. The angular and energy distributions of the reflected neutrons along with the energy-dependent and total flux at various depths are contained in tabular form on the printouts. Neutron number current, number flux and dose transmission as functions of thickness are also given in tabular form on the printouts.

A table of summary information on reflection is presented. This contains number current, number flux, dose and energy reflection factors as functions of incident energy and angle.

A few figures are presented to illustrate graphically the meaning of the various tabular results.

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INTRODUCTION

A systematic study of neutron transport in common materials is in progress at the Ballistic Research Laboratories. Primary emphasis has been placed upon the dose transmitted through various thicknesses of these materials when monoenergetic neutrons strike a laterally infinite slab, not necessarily homogeneous, at a fixed angle of incidence. The principal results are given in Reference 1.

The Monte Carlo machine program which calculates these results also calculates number current, number flux, dose, and energy reflection and transmission; reflected and transmitted angular and energy distributions; and energy-dependent and total flux versus depth. Only a small fraction of this information has been reported previously in conjunction with the dose transmission results. The present report presents the calculated results just mentioned for a single material - concrete. The reason for tabular presentation of the detailed results is simply that a much larger number of pages would be required to display equivalent information graphically. The gross results for reflection are given in a single table discussed in the following section.

SUMMARY DATA ON REFLECTION

Table 1 gives the number current, number flux, energy, and dose reflection factors (albedos) for eight incident energies and four incident angles. "Flux" and "factor" are defined in the next section. The slab thickness for which the entries in Table 1 are calculated is 24 inches. This is sufficiently thick so that the results differ imperceptibly from the corresponding results for a slab of infinite thickness.

The composition assumed for concrete is based on that given in Reference 2. The atoms of all elements other than hydrogen, oxygen, aluminum, and silicon were replaced by silicon atoms. Table 7 gives the elemental composition assumed in the machine calculations. Moderate changes in the composition of the concrete, except for the hydrogen content, would not greatly alter the results given.

A neutron cutoff energy of 10 electron volts was used for all of the calculations. Below this energy neutron trajectories were no longer followed in the machine program.

DESCRIPTION OF MACHINE PRINTOUTS

Two distinct types of machine printout are included in this report. For each incident neutron energy and angle, there are two printouts and these are placed side by side. We now describe the meaning of the information on the two types of printout, denoting them by Type 1 and Type 2. Although the actual printout sheets are not so labelled, no difficulty will be experienced in distinguishing between the two.

A. Description of Type 1 Printout

The problem calculated is defined by the fifth line of the machine printout, which gives the slab configuration, and the first two numbers of the fourth line, which give the neutron's incident energy (in MEV) and the cosine of the angle between the incident direction and the slab normal. The third number in the fourth line is the energy cutoff, that energy (in MEV) below which neutron trajectories are no longer traced in the Monte Carlo program. On the second line of the machine printout, the first two numbers are the run number, used for indexing purposes, and the number of neutron histories used in the Monte Carlo program. The fifth number in the second line is the number of mean free paths the incident neutron would have to traverse to emerge from the rear face of the slab without having suffered an interaction.

The third and fourth numbers on the second line designate the set of energy intervals and angular intervals, respectively, which are used in the calculation. A transmitted or reflected neutron emerges from the slab with a definite energy and direction; this precise information would be very difficult to utilize. Therefore, a set of energy and angular intervals are utilized and the emergent neutron is placed in the appropriate interval. Several energy "sets" have been used. The energy intervals, of which the various sets are composed, are shown in Table 2. The sets are designed to make full use of the ten energy intervals available in the machine program for all source energies. Thus the intervals used must vary with the source energy. The scheme devised

was that of refining the remaining upper energy intervals when decrease of the source energy makes the highest energy interval in a given set devoid of neutrons. This method provides the most detailed spectral information at the highest available emergent neutron energies, that is, in the most important part of the spectrum. At the same time, the lower energy intervals are constant from set to set (the sets are ordered: 2, 2A,.... 2E), thus allowing inter-comparison as the source energy is changed.

Tables 4 and 5 and the diagram accompanying Table 5 show the angular intervals which have been used. θ_1, θ_2, ϕ_1, and ϕ_2 are the end points of the angular intervals shown in these tables. The θ 2541 histogram has been used for normally incident neutrons, the $\theta\phi$ histogram for slant incident neutrons.

The seventh and eighth lines of the ORDVAC printout give the position in centimeters of internal interfaces which subdivide the slab into eight regions. They are used by the Monte Carlo transport code to provide a spatial breakdown of certain events which take place within the slab.

The remaining entries on the Type 1 machine printouts are explained with the aid of the following notation.

Let T_{ij} = fraction of neutrons transmitted into the $i^{\underline{th}}$ energy group and $j^{\underline{th}}$ angular sector.

R_{ij} = fraction of neutrons reflected into the $i^{\underline{th}}$ energy group and $j^{\underline{th}}$ angular sector.

D_i = flux to dose conversion factor for $i^{\underline{th}}$ energy group (see Table 2).

D_E = flux to dose conversion factor for source energy (see Table 3).

Ω_j = number of steradians in $j^{\underline{th}}$ angular sector (see Tables 4 and 5).

θ = angle of incident neutrons with respect to slab normal.

$\overline{\text{Sec } \theta_j}$ = mean value of secant for neutrons in the $j^{\underline{th}}$ angular sector; actually the secant of the mean angle is used.

Subscripts i and j refer to the $i^{\underline{th}}$ energy group and $j^{\underline{th}}$ angular sector, respectively.

The flux-to-dose conversion factors in Tables 2 and 3 are based on Reference 3.

Then, F = incident flux per neutron = Sec θ

D = incident dose per neutron = D_E Sec θ

The quantities in the Table "Number of Scattered Neutrons vs. Energy" are then given by:

$$(\text{Number Transmission Factor})_i = \sum_{j=1}^{12} T_{ij} \qquad i = 1, 2, \ldots .10$$

$$(\text{Number Flux Transmission Factor})_i = \frac{1}{F} \sum_{j=1}^{12} T_{ij} \ \overline{\text{Sec } \theta_j} \qquad i = 1, 2, \ldots .10$$

$$(\text{Dose Transmission Factor})_i = \frac{D_i}{D} \sum_{j=1}^{12} T_{ij} \ \overline{\text{Sec } \theta_j} \qquad i = 1, 2, \ldots .10$$

The corresponding quantities for the reflected neutrons are obtained by replacing T_{ij} by R_{ij}.

The quantities in the Table "Number of Scattered Neutrons vs. Angle" are given by:

$$(\text{Number Transmission Factor})_j = \sum_{i=1}^{10} T_{ij} \qquad j = 1, 2, \ldots .12$$

$$(\text{Number Transmission Factor/Steradian})_j = \frac{1}{\Omega_j} \sum_{i=1}^{10} T_{ij} \qquad j = 1, 2, \ldots .12$$

$$(\text{Dose Transmission Factor/Steradian})_j = \frac{\overline{\text{Sec } \theta_j}}{D\ \Omega_j} \sum_{i=1}^{10} T_{ij}\ D_i \qquad j = 1, 2, \ldots .12$$

The corresponding quantities for the reflected neutrons are again obtained by replacing T_{ij} by R_{ij}.

The quantities listed on the lines following the Table "Number of Scattered Neutrons vs Angle" are all defined when the word "Factor" is defined. Wherever the word "Factor" is used, the operation of dividing the quantity in question by the corresponding incident quantity is implied.

The final two quantities listed are not fractions, but are the mean energy of the scattered transmitted neutrons and of the reflected neutrons.

Table 6 is a list of abbreviations used on both the Type 1 and Type 2 machine printouts. It is believed that the abbreviations used will quickly become clear so that constant reference to the list will not be necessary.

The Type 1 printouts in the present report contain little or no information on transmission. This is because the slab is thick and, except for a few machine runs, no statistical efficiency improving technique was utilized in the calculations. The main machine printout contains detailed information on transmission for various depths within the slab. The Type 2 printout contains the most important part of this information.

B. Description of Type 2 Printout

The entries in the top three lines are identical to some of the entries previously defined for the Type 1 printout; they serve to identify the problem.

Fluxes and doses are defined as before. Note, however, that the word "factor" is not used on the Type 2 printout. All entries on this printout are given on a per incident neutron basis. That is, the phrase "per neutron" (or the abbreviation "per NT") on this printout means "per incident neutron."

The first two tables on this printout are the fluxes broken down into ten energy groups. The energy interval spanned by each group is given in Table 2; the last entry in the second row of the printout specifies the relevant energy set in Table 2.

The first table, "Scattered Flux per Neutron at Region Boundaries in Energy Groups," gives the energy-dependent fluxes due to scattered neutrons (uncollided excluded) at what are termed "region boundaries." The slab configuration through which the machine program traces neutron trajectories is divided into eight sub-slabs by means of seven interior interfaces. Each time

a neutron crosses such an interface its contribution to the flux (in the energy interval appropriate for the crossing in question) is recorded. A neutron may cross an interior interface any number of times. Generally speaking, however, once a neutron gets more than a few inches from a given interface, it seldom recrosses that interface. Thus, for most of the interior interfaces the number of recrossings is approximately the same as would take place in the interior of a semi-infinite medium of the same material.

In the Type 2 printout all fluxes (and doses) calculated except those in the first row of entries of the first table "Scattered Flux per Neutron at Region Boundaries in Energy Groups" involve the secants of the actual angles at which the neutrons cross the various interfaces, except that for angles whose secant is greater than eight, the value eight is substituted for the secant. In the first row of entries of the first table, and in all cases on the Type 1 printout, the fluxes and doses calculated are based on an average value of the secant for each of the angular regions into which neutrons are grouped. The Type 1 printout fluxes are usually about 3 or 4% higher than the Type 2, the value depending on the actual angular distribution. (This is apart from the difference between "Flux Transmission or Reflection Factor" and "Flux Transmitted or Reflected per Incident Neutron" in accordance with the previously given definitions of these terms.) It is readily shown* that the fluxes calculated with the greatest value of the secant limited to eight are, on the average, six percent low for an isotropic distribution; the error is smaller for a distribution which is peaked forward (which is almost always the case for transmitted neutrons). Thus fluxes and doses listed on the Type 2 printouts average about 4 to 6% low, while those on the Type 1 printout average 1 or 2% low.

The second table, "Scattered Flux Transmitted per Neutron in Energy Groups Versus Thickness", again contains the energy-dependent fluxes, but this time only a neutron's first crossing of an interface is tallied. Thus, for example, the

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* The authors are indebted to Dr. M. Kalos, United Nuclear Corporation, for this demonstration.

entries in the 4" row (left hand or index column reads 4") for a 24" thick slab constitute the energy-dependent fluxes which would be transmitted per incident neutron by a 4" thick slab - just as though the slab being treated in the machine program were only 4" thick. This method allows the calculation of eight problems simultaneously.

In the third or bottom table in the printout, the entries are not broken down by energy group. The first four columns contain information similar to that in the immediately preceding paragraph; each row corresponds to a slab whose thickness is specified in the index column, the remaining thickness of the slab actually treated having no effect on the table entries. Each column in this table bears its own heading. The first column represents the number (we use this interchangeably with the term number current) transmitted per incident neutron, including the uncollided. The second and third columns are the flux and dose per incident neutron, again including the uncollided. The fourth column gives the uncollided contribution to the flux per incident neutron*. The uncollided contribution to the number current is obtained from the entries in this column upon dividing by the secant of the incident angle; the uncollided contribution to the dose is obtained upon multiplication of the entries by the flux-to-dose conversion factor at the source energy from Table 3. (The machine program interpolates in a table in obtaining source energy flux-to-dose conversion factors.)

The final column in the bottom table provides information analogous to that in the first table, i.e., the result of every crossing of an interface by each neutron is contained therein. The uncollided contribution is also included here. Thus, the second and fifth columns of the bottom table represent a total over all energy groups (plus the uncollided) of the flux due to neutrons' first crossings of the various interfaces, and due to all crossings of the interfaces, respectively. The difference represents the effect of crossings other than the first.

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* At each interface, the uncollided flux in this column is based on an integral number of neutrons (or zero). This does not affect any other entries on the printout. When splitting is used, uncollided as well as scattered neutrons are split upon crossing a splitting surface.

In the first and third tables of the Type 2 printout, the first row of entries corresponds to zero inches, i.e., the incident face, the machine suppressing the zero. Since the first table refers to scattered neutrons only, the first row entries in this table are due solely to reflected neutrons. The first four columns of the third table refer to transmitted neutrons, so reflected neutrons are not included at the incident face (first row entries). The entry in the first row of the final column of the bottom table represents the sum of the fluxes due to the incident neutrons and the reflected neutrons.

DISCUSSION

The machine printouts are arranged in order of increasing energy; for each energy, they are arranged in order of increasing angle with respect to the slab normal. The incident energies (in MEV) for which results are given are: 0.1, 0.25, 0.5, 1.0, 2.0, 3.0, 5.0 and 14.0. The incident angles (degrees) are: 0, 30, 45 and 70. Following the thirty-two sets of printouts so arranged, there are a few miscellaneous printouts. The latter were calculated after a "splitting" technique had been added to the basic Monte Carlo machine program. The flux distributions are reliable to much greater depths for the split runs (which require much more machine time) but the information on reflection is not significantly improved by splitting.

Figures 1 - 4 have been included to show graphically the meaning of some of the tabular results. Figure 1 is a reflected energy histogram illustrative of information contained on the Type 1 printout. The reflected energy distributions are seen to vary slowly with incident angle for a given incident energy, there being relatively more reflected neutrons near the source energy at the larger angles of incidence. Figure 2 is also obtained from a Type 1 printout and is typical of reflected angular distributions generally. For the normal incidence curve shown on Figure 2, there are twelve points whereas on the curves for slant incidence there are four points. Since for the case of normal incidence the reflected neutron distribution has no azimuthal dependence, the twelve available angular regions are all used to obtain the dependence of the reflected distribution upon the polar angle. For slant incident neutrons there

is an azimuthal dependence; this has been suppressed in Figure 2 by integration over the azimuthal angle. This accounts for the greater dispersion of the plotted points for the normal incidence curve as compared with that of the slant incidence curves.

Figures 3 and 4 are obtained from the Type 2 printout. The shapes of the curves in Figure 3 are typical for flux versus depth plots for various materials, incident angles and incident energies. The curves for neutron energies near the source energy peak a little sooner than those for lower energies since fewer collisions are required for energies near the source energy. Peaking occurs on the order of a mean free path inside the slab and the rate of decrease after the peak is very nearly the same for all neutron energies. This is in accord with the fact that a quasi-equilibrium neutron distribution becomes established after a penetration distance of a few mean free paths*. In Figure 4 the shapes of the curves are again similar. This figure illustrates the difference between flux versus depth (slab thickness 24") and flux versus thickness in which case the slab thickness is equal to the value of the abscissa just as though the remainder of the 24" were not present. The difference between the two curves in Figure 4 represents the increase in flux due to neutrons bouncing back and forth across a surface on the slab interior.

The total flux is always much better determined statistically than are the fluxes in the various energy groups. The fact that the rate of fall off after reaching the peak is about the same for all groups and for the total can be used in graphing the behavior of the flux in a particular energy group. Knowing the behavior of the energy-dependent fluxes enables one to calculate the volume distribution of any desired type of neutron interaction within a slab.

For certain problems which require detailed input information, it would be preferable to have the information in the form of analytical expressions fitted to the data since the handling of detailed information via tables is

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* The bending down of the curves indicates a slow softening of the spectrum.

cumbersome, especially in hand computations. Many of the more important results conform to general patterns as depicted by the curves in the illustrative figures. Thus, one might expect a reasonable degree of success in fitting the results to analytical expressions. However, the tabular printouts contain a diversity of frequently useful information so that a large number of fits would be required. Those likely to be the most generally useful are not obvious at present. Further, each prospective user must place his own demands on the accuracy with which the analytical expressions fit the data, and the range over which each fit is valid. Therefore, the authors feel that the tabular display of results chosen is the most appropriate form of presentation.

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FIG. I. NEUTRON REFLECTED ENERGY SPECTRUM

SLAB MATERIAL = CONCRETE
INCIDENT ENERGY = 3.0 MEV
THICKNESS = 24 INCHES
θ_o = ANGLE OF INCIDENCE

F = ARBITRARY NUMBER

BASED ON RUN NOS. 657 – 660

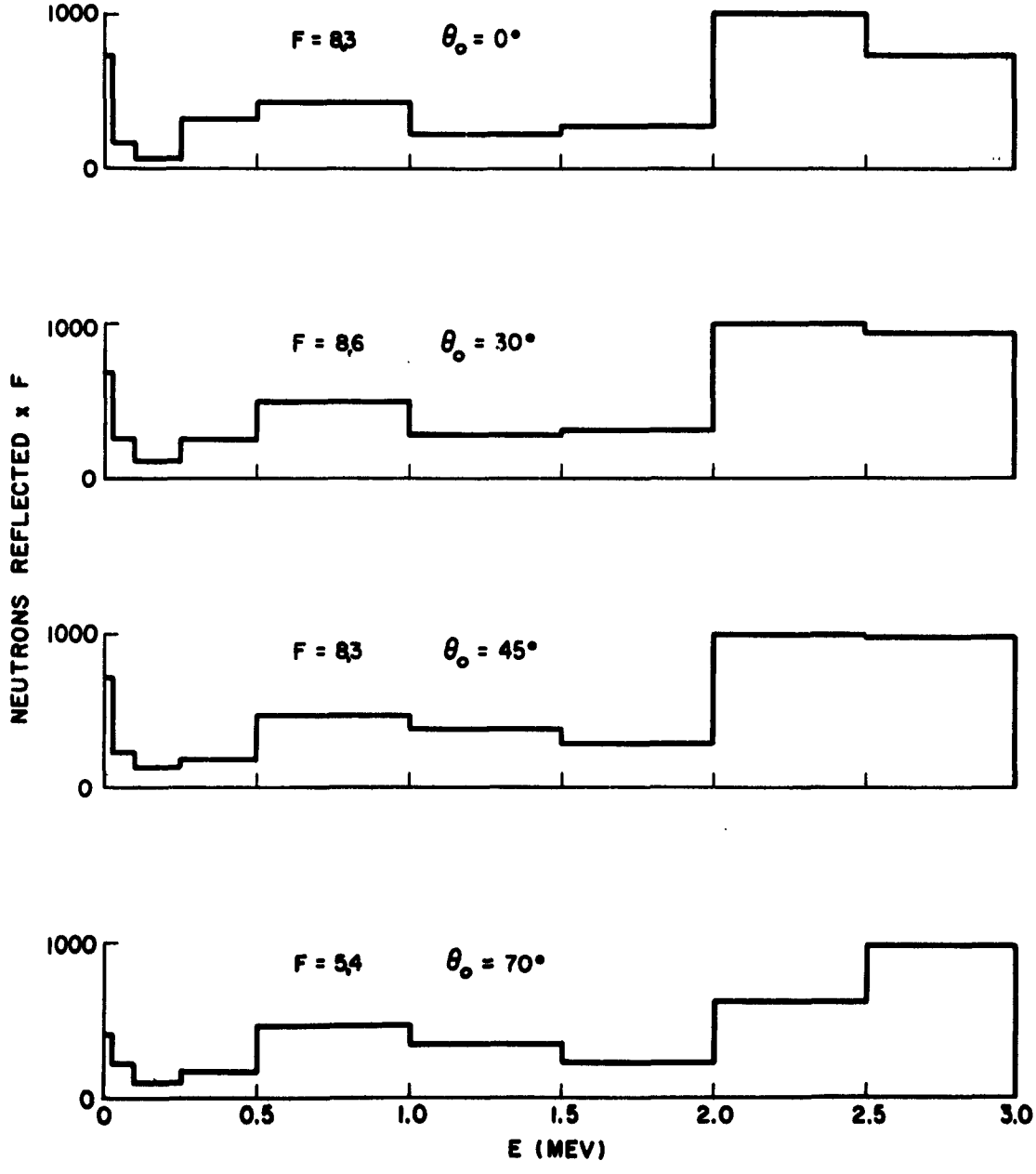


FIG. 2. NEUTRON REFLECTED ANGULAR DISTRIBUTION

SLAB CONFIGURATION = 24" CONCRETE
INCIDENT ENERGY = 1.0 MEV
INCIDENT ANGLES:
⊙ - 0°
● - 30°
♦ - 45°
♦ - 70°

BASED ON RUN NOS. 649-652

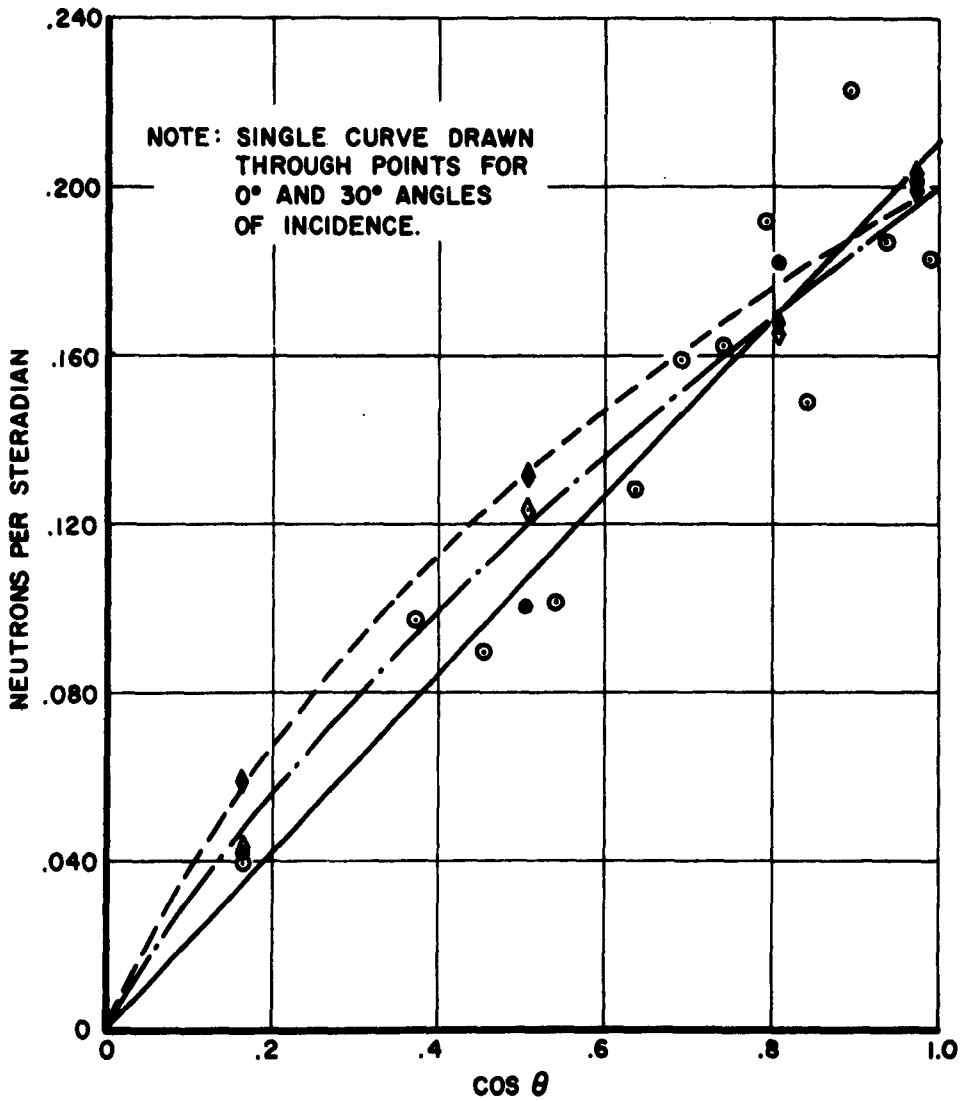


FIG. 3. ENERGY DEPENDENT FLUX VS. DEPTH
AND
TOTAL FLUX VS. DEPTH

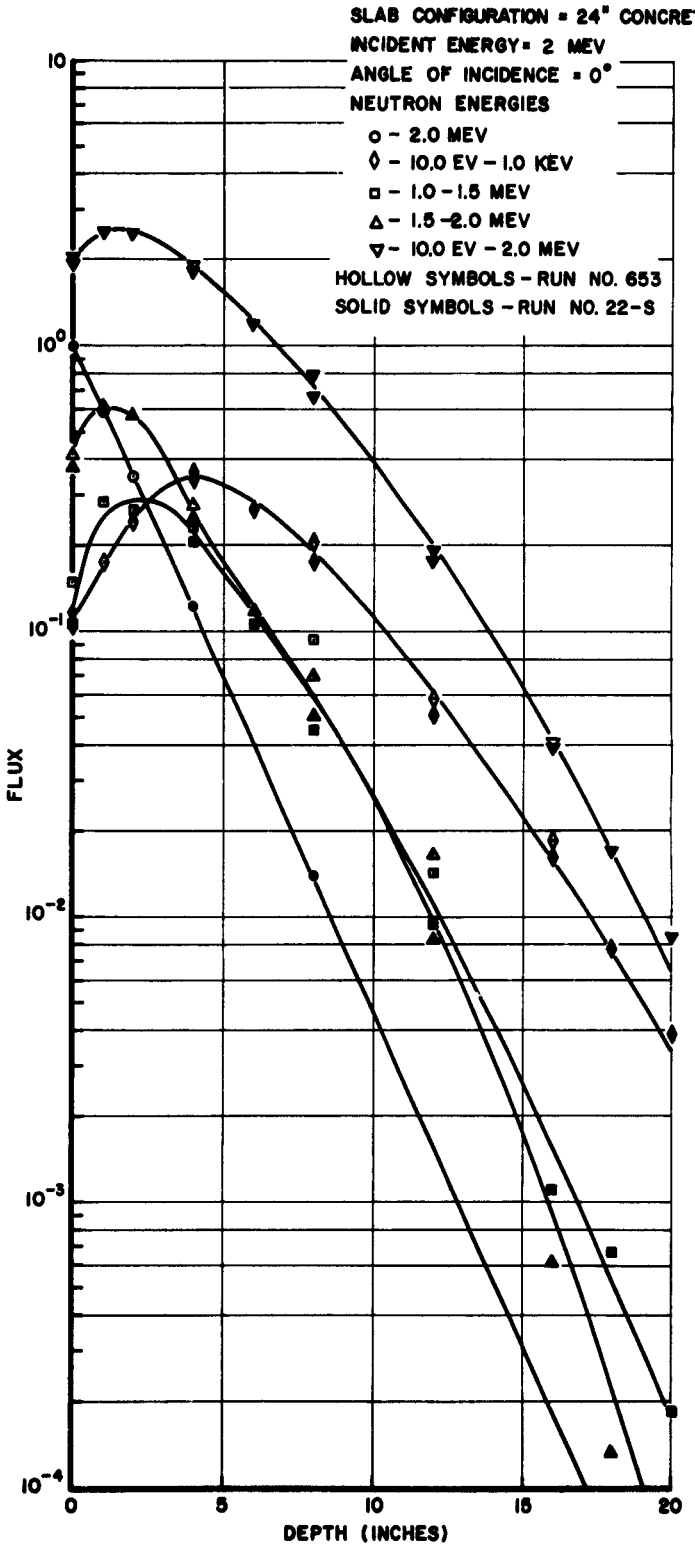


FIG. 4. TOTAL FLUX VS. DEPTH
AND
TOTAL FLUX VS. THICKNESS

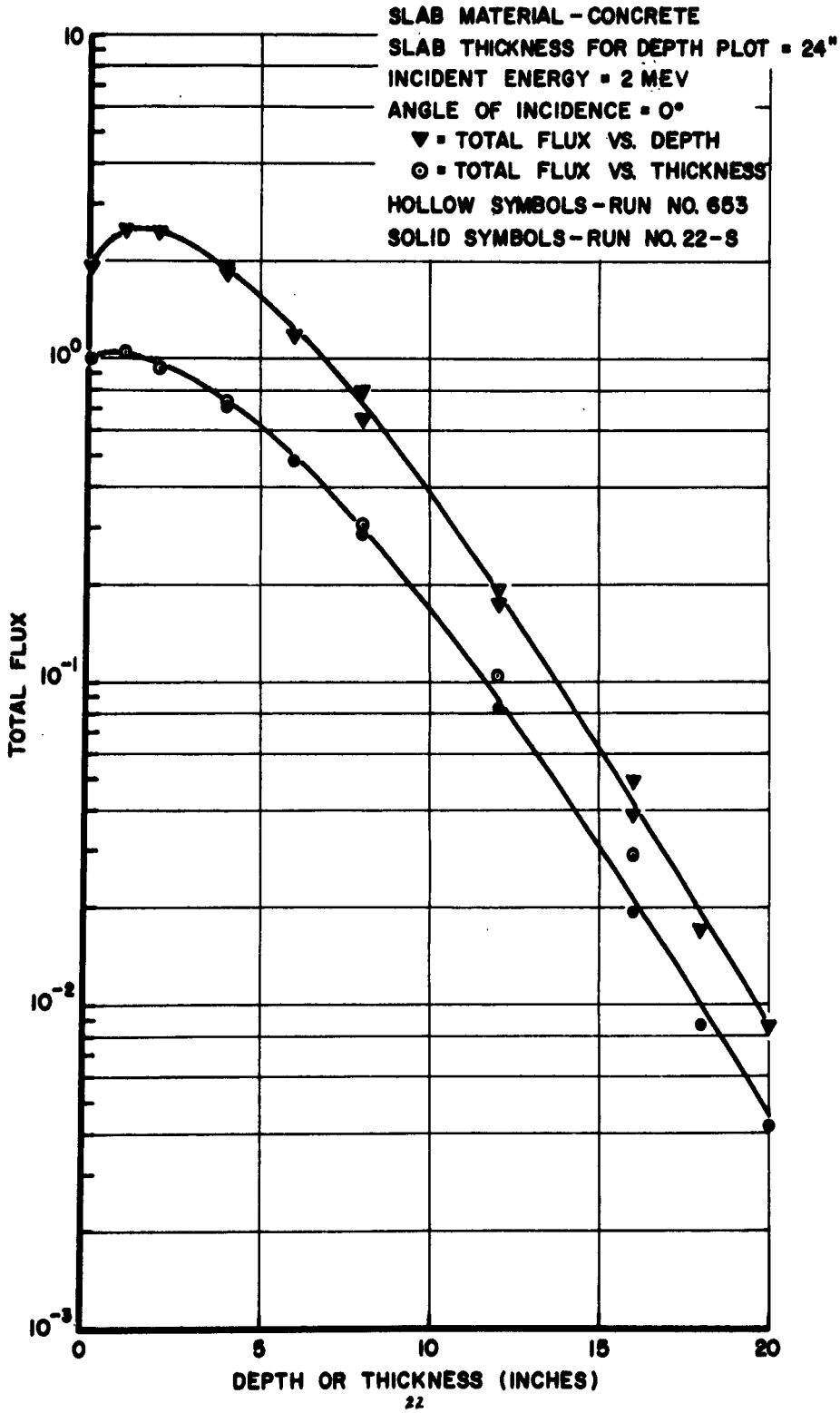


TABLE 1

CONCRETE REFLECTION DATA

	NUMBER ALBEDO				NUMBER FLUX ALBEDO			
E_o(MEV) \ θ_o(Deg)	0	30	45	70	0	30	45	70
0.1	.456	.514	.531	.654	.909	.859	.782	.499
0.25	.570	.603	.659	.729	1.169	1.107	.989	.563
0.5	.612	.616	.663	.742	1.188	1.054	.971	.568
1.0	.694	.712	.734	.769	1.383	1.242	1.052	.585
2.0	.529	.563	.615	.696	1.006	.916	.864	.527
3.0	.474	.505	.540	.651	.909	.842	.765	.464
5.0	.411	.432	.474	.582	.801	.699	.625	.419
14.0	.298	.333	.342	.458	.569	.580	.515	.327
	ENERGY ALBEDO				DOSE ALBEDO			
0.1	.138	.168	.180	.279	.598	.574	.513	.344
0.25	.233	.252	.282	.360	.691	.663	.600	.354
0.5	.248	.254	.300	.376	.673	.630	.603	.382
1.0	.366	.387	.401	.453	.895	.812	.702	.409
2.0	.246	.263	.306	.374	.684	.650	.634	.409
3.0	.218	.241	.256	.327	.616	.585	.529	.344
5.0	.176	.185	.209	.291	.514	.430	.410	.297
14.0	.0680	.0809	.0891	.134	.319	.326	.308	.208

TABLE 2

ENERGY SETS AND FLUX TO DOSE CONVERSION FACTORS

ENERGY GROUP	SET 2		SET 2A		SET 2B	
	Energy Interval (MEV)	Conversion Factor (Rads/Unit Flux)	Energy Interval (MEV)	Conversion Factor (Rads/Unit Flux)	Energy Interval (MEV)	Conversion Factor (Rads/Unit Flux)
1	.00001-.001	$.64 \times 10^{-9}$	.00001-.001	$.64 \times 10^{-9}$	.00001-.001	$.64 \times 10^{-9}$
2	.001-.025	.59	.001-.025	.59	.001-.025	.59
3	.025-.1	.81	.025-.1	.81	.025-.1	.81
4	.1-.25	1.3	.1-.25	1.3	.1-.25	1.3
5	.25-.5	2.0	.25-.5	2.0	.25-.5	2.0
6	.5-1.0	3.1	.5-1.0	3.1	.5-1.0	3.1
7	1.0-2.0	4.0	1.0-2.0	4.0	1.0-1.5	3.9
8	2.0-3.0	4.3	2.0-3.0	4.3	1.5-2.0	4.1
9	3.0-5.0	5.1	3.0-4.0	4.7	2.0-2.5	4.2
10	5.0-16.0	6.8	4.0-5.0	5.5	2.5-3.0	4.4

ENERGY GROUP	SET 2C		SET 2D		SET 2E	
	Energy Interval (MEV)	Conversion Factor (Rads/Unit Flux)	Energy Interval (MEV)	Conversion Factor (Rads/Unit Flux)	Energy Interval (MEV)	Conversion Factor (Rads/Unit Flux)
1	.00001-.001	$.64 \times 10^{-9}$	.00001-.001	$.64 \times 10^{-9}$	.00001-.0005	$.65 \times 10^{-9}$
2	.001-.025	.59	.001-.025	.59	.0005-.001	.62
3	.025-.1	.81	.025-.0625	.71	.001-.013	.59
4	.1-.25	1.3	.0625-.1	.91	.013-.025	.59
5	.25-.375	1.8	.1-.175	1.2	.025-.0625	.71
6	.375-.5	2.2	.175-.25	1.4	.0625-.1	.91
7	.5-.75	2.8	.25-.375	1.8	.1-.175	1.2
8	.75-1.0	3.4	.375-.5	2.2	.75-.25	1.4
9	1.0-1.5	3.9	.5-.75	2.8	.25-.375	1.8
10	1.5-2.0	4.1	.75-1.0	3.4	.375-.5	2.2

TABLE 3

FLUX TO DOSE CONVERSION FACTORS FOR SOURCE ENERGIES

E_o (MEV)	Conversion Factor (D_E) (Rads. per unit flux)
.1	1.1×10^{-9}
.25	1.7
.5	2.4
1.0	3.8
2.0	4.1
2.67	4.4
3.0	4.6
4.0	5.1
5.0	5.8
7.0	6.8
10.0	7.0
14.1	7.0*

* Extrapolated

TABLE 4

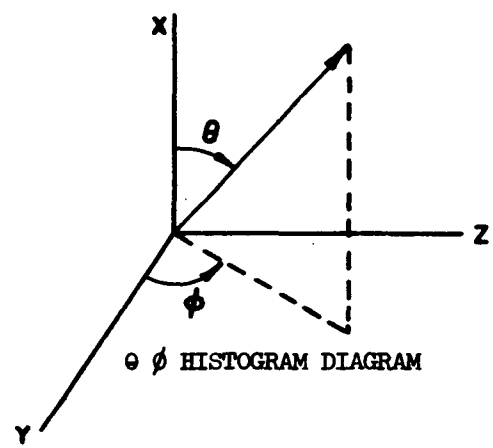
HISTOGRAM θ 2541

Sector	Cos θ_1	Cos θ_2	θ_1	θ_2	$\bar{\theta}$	Sec $\bar{\theta}$	Solid Angle
1	1.00000	.95833	0	16°35.9'	8°18'	1.0106	.26180
2	.95833	.91667	16°35.9'	23°33.4'	20° 5'	1.0647	.26180
3	.91667	.86667	23°33.4'	29°55,6'	26°45'	1.1198	.31416
4	.86667	.81667	29°55.6'	35°14.8'	32°35'	1.1868	.31416
5	.81667	.76667	35°14.8'	39°56.7'	37°36'	1.2622	.31416
6	.76667	.71667	39°56.7'	44°13.2'	42° 5'	1.3474	.31416
7	.71667	.66667	44°13.2'	48°11.4'	46°12'	1.4448	.31416
8	.66667	.58333	48°11.4'	54°18.9'	51°15'	1.5976	.52360
9	.58333	.50000	54°18.9'	60° 0'	57° 9'	1.8435	.52360
10	.50000	.41667	60° 0'	65°22.5'	62°41'	2.1791	.52360
11	.41667	.33333	65°22.5'	70°31.7'	67°57'	2.6637	.52360
12	.33333	.00000	70°31.7'	90°	80°16'	5.9150	2.09440

TABLE 5

HISTOGRAM θ ϕ

Sector	Cos θ_1	Cos θ_2	θ_1	θ_2	$\bar{\theta}$	Sec $\bar{\theta}$	Solid Angle	$\lvert \phi_1 \rvert$	$\lvert \phi_2 \rvert$
1	1.0	11/12	0	$23^\circ 33.4'$	$11^\circ 47'$	1.0215	$\pi/6$	0	π
2	11/12	2/3	$23^\circ 33.4'$	$48^\circ 11.4'$	$35^\circ 52'$	1.2340	$\pi/6$	$2\pi/3$	π
3	11/12	2/3	$23^\circ 33.4'$	$48^\circ 11.4'$	$35^\circ 52'$	1.2340	$\pi/6$	$\pi/3$	$2\pi/3$
4	11/12	2/3	$23^\circ 33.4'$	$48^\circ 11.4'$	$35^\circ 52'$	1.2340	$\pi/6$	0	$\pi/3$
5	2/3	1/3	$48^\circ 11.4'$	$70^\circ 31.7'$	$59^\circ 22'$	1.9625	$\pi/6$	$3\pi/4$	π
6	2/3	1/3	$48^\circ 11.4'$	$70^\circ 31.7'$	$59^\circ 22'$	1.9625	$\pi/6$	$\pi/2$	$3\pi/4$
7	2/3	1/3	$48^\circ 11.4'$	$70^\circ 31.7'$	$59^\circ 22'$	1.9625	$\pi/6$	$\pi/4$	$\pi/2$
8	2/3	1/3	$48^\circ 11.4'$	$70^\circ 31.7'$	$59^\circ 22'$	1.9625	$\pi/6$	0	$\pi/4$
9	1/3	0	$70^\circ 31.7'$	90°	$80^\circ 16'$	5.9150	$\pi/6$	$3\pi/4$	π
10	1/3	0	$70^\circ 31.7'$	90°	$80^\circ 16'$	5.9150	$\pi/6$	$\pi/2$	$3\pi/4$
11	1/3	0	$70^\circ 31.7'$	90°	$80^\circ 16'$	5.9150	$\pi/6$	$\pi/4$	$\pi/2$
12	1/3	0	$70^\circ 31.7'$	90°	$80^\circ 16'$	5.9150	$\pi/6$	0	$\pi/4$



θ ϕ HISTOGRAM DIAGRAM

TABLE 6

ABBREVIATIONS USED ON MACHINE PRINTOUTS

MFP.	Mean Free Path
INC.	Incident
COS.	Cosine
EGY.	Energy
FLX.	Flux
NT.	Neutron
DSE.	Dose
NO.	Number
TRAN, TRANS	Transmission
REFL.	Reflection
FACT.	Factor
B-POLY.	Polyethylene borated with 8% boron carbide by weight
STER.	Steradian
S, SCAT.	Scattered
U, UNC., UNSCAT.	Unscattered
ABS.	Absorption
GRPS.	Groups
TTL.	Total
BDS.	Boundaries

TABLE 7

ATOMIC COMPOSITION OF CONCRETE

Element	10^{21} atoms/cm^3
H	13.75
O	45.87
Al	1.743
Si	20.15

The density corresponding to this composition is 2.26 grams per cubic centimeter. This is a slight change from the 2.30 grams per cubic centimeter quoted in Reference 2, and is due to replacement of various minor constituent atoms by silicon atoms in the calculations.

REFERENCES

1. Allen, F., Futterer, A. and Wright, W. Neutron Transmission Versus Thickness for Some Common Materials. BRL 1174, September 1962.

2. The Reactor Handbook, Vol. 1, Declassified Edition, February 1955. Table 2.9.10, p. 725.

3. Goldstein, Herbert. Fundamental Aspects of Reactor Shielding. Addison-Wesley Publishing Co., Inc. 1959.

MACHINE PRINTOUTS

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
637	.10000000	1.00000000	.00001010	2E

SLAB CONFIGURATION CONCRETE

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.17083112	.04413892	.24208772	.05351490	.08836372
1	.39932116	.11434288	.52042777	.19508532	.33407833
2	.48318902	.07591803	.46472339	.10793687	.29884997
4	.35500121	.04645520	.26940263	.06579904	.09738744
8	.09033001	.00662699	.04918264	.00677310	.01903199
12	.00940331		.00826427	.00124324	
16					
20					
24					

INCHES	6	7	8	9	10
	.30996491				
1	.38144427				
2	.29286544				
4	.06803847				
8	.00617091				
12					
16					
20					
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1	.01688632	.01162593	.11739091	.08775879	.19883902
2	.10552566	.02598936	.20097870	.05621310	.20108732
4	.12794938	.02529634	.14373056	.04490717	.07656972
8	.04074614	.00292226	.02232946	.00677310	.01564233
12	.00589446		.00252067	.00124324	
16					
20					
24					

INCHES	6	7	8	9	10
1	.23391536				
2	.19422959				
4	.06009160				
8	.00206086				
12					
16					
20					
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.00000000	1.09999999	1.00000000	1.85428367
1	.77399999	1.06141635	.95500293	.39500001	2.33969972
2	.60499999	.94002373	.75126190	.15600001	1.87948273
4	.32599999	.50254476	.35292706	.02400000	.92608401
8	.05700000	.09047414	.05817351		.17811563
12	.00800000	.00965837	.00587676		.01891082
16					
20					
24					

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
637	1000	2E	2541	22.264684

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
.100000	1.000000	.000010	1.000000	1.100000

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.088000	.170831	.100946
2				.028000	.044139	.024878
3				.129000	.242088	.129847
4				.031000	.053515	.028703
5				.052000	.088364	.057035
6				.128000	.309965	.256426
7						
8						
9						
10						

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1				.033000	.126050	.082749
2				.041000	.156608	.101523
3				.034000	.108225	.077251
4				.037000	.117774	.091557
5				.036000	.114591	.089668
6				.038000	.120957	.100594
7				.041000	.130507	.119405
8				.054000	.103132	.105460
9				.038000	.072574	.083316
10				.024000	.045836	.069161
11				.027000	.051566	.087871
12				.053000	.025306	.104187

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.456000	.908901	.597835	013849	.861505	.003000	.541000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
1102.202618		003037

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
638	.10000000	.86603000	.00001010	2E

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.17379050	.04544503	.20650052	.08675855	.10933598
1	.38336050	.11576291	.53452560	.22447569	.32424691
2	.45581342	.07976857	.42272626	.09493770	.23777730
4	.35575741	.03350751	.27652487	.08266453	.08575116
8	.07484786	.01221049	.02157635	.00238137	.00326856
12	.00298051		.00892558		
16	.00497114		.00147406		
20					
24					

INCHES	6	7	8	9	10
	.37041402				
1	.42177509				
2	.27663663				
4	.04046240				
8	.00230164				
12					
16					
20					
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1	.02015314	.03060339	.11094510	.10292352	.16137985
2	.10150372	.02535726	.19551974	.06655979	.16651394
4	.14826884	.01863436	.13295337	.05200523	.05891771
8	.04192168	.00118243	.01591451	.00238137	.00326856
12	.00298051		.00480826		
16			.00147406		
20					
24					

INCHES	6	7	8	9	10
1	.26919396				
2	.21047843				
4	.03663669				
8	.00230164				
12					
16					
20					
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.15469441	1.27016384	1.15469441	2.10636684
1	.73699999	1.09010444	.98190966	.39490549	2.39905218
2	.56299999	.90103213	.71805054	.13509925	1.70275912
4	.27699999	.46242722	.31224968	.01501104	.88967891
8	.04500000	.06697019	.04358491		.11658627
12	.00600000	.00778877	.00472110		.01190609
16	.00100000	.00147406	.00088444		.00644521
20					
24					

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
638	1000	2E	04	25.708906

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
.100000	.866030	.000010	1.154694	1.270164

SLAB CONFIGURATION CONCRETE

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.104000	.150508	.088936
2				.029000	.039357	.022183
3				.115000	.178836	.095921
4				.048000	.075135	.040300
5				.063000	.094688	.061117
6				.155000	.320790	.265380
7						
8						
9						
10						

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1				.099000	.189076	.105075
2				.065000	.124141	.083422
3				.066000	.126050	.085834
4				.073000	.139419	.098452
5				.032000	.061115	.064654
6				.050000	.095493	.104048
7				.032000	.061115	.071175
8				.040000	.076394	.084838
9				.016000	.030558	.114020
10				.012000	.022918	.080401
11				.014000	.026738	.105305
12				.015000	.028648	.098723

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.514000	.859314	.573837	.016805	.831936	.002000	.484000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
1102.205236		003270

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
639	.10000000	.70711000	.00001010	2E

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.14205252	.05533797	.23686001	.12027200	.20821752
1	.39229672	.10498291	.43699129	.13908355	.36412223
2	.48669815	.09944943	.40686227	.14421790	.22566866
4	.26854128	.04095324	.21938761	.05432057	.06640256
8	.05955767	.00552538	.01359984	.00217548	.00173416
12	.00191772	.00230604	.00300035		
16					
20					
24					

INCHES	6	7	8	9	10
	.34306900				
1	.45428895				
2	.26897793				
4	.05660696				
8					
12					
16					
20					
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1	.03885120	.00688777	.14297887	.07127863	.20300604
2	.09973834	.02034437	.17949177	.10388542	.14732021
4	.12052557	.02232391	.12352596	.04406870	.04387633
8	.03014240	.00444073	.01190965	.00217548	.00173416
12	.00191772	.00230604	.00119888		
16					
20					
24					

INCHES	6	7	8	9	10
1	.32765306				
2	.21617428				
4	.02830615				
8					
12					
16					
20					
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.41420712	1.55562783	1.41420712	2.46846057
1	.68399999	1.17107728	1.05585451	.38042171	2.27218737
2	.50799999	.86877731	.68024854	.10182292	1.73369726
4	.25899999	.38969766	.25953151	.00707104	.71328326
8	.03200000	.05040241	.03200424		.08259253
12	.00400000	.00542264	.00337657		.00722412
16					
20					
24					

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
639	1000	2E	θφ	31.486875

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
.100000	.707110	.000010	1.414207	1.555628

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.074000	.100447	.059355
2				.035000	.039130	.022055
3				.125000	.167486	.089833
4				.056000	.085045	.045615
5				.094000	.147233	.095032
6				.147000	.242587	.200686
7						
8						
9						
10						

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1				.076000	.145149	.067847
2				.066000	.126050	.070523
3				.068000	.129870	.070447
4				.071000	.135600	.077901
5				.036000	.068755	.060186
6				.044000	.084034	.072570
7				.045000	.085943	.077365
8				.053000	.101222	.089894
9				.017000	.032468	.097600
10				.018000	.034377	.099052
11				.019000	.036287	.105660
12				.018000	.034377	.089902

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.531000	.781929	.512577	018050	.819494	.001000	.468000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
1102.205236		003399

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
640	.10000000	.34202000	.00001010	2E

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.13148252	.04424903	.26563950	.09236999	.30517551
1	.35816408	.08544525	.46033461	.24932336	.32697010
2	.34041295	.06167677	.32033201	.11887209	.16370855
4	.26939199	.03522531	.13061188	.03586338	.03650620
8	.04659970	.00513117	.01183766	.00257243	.00126540
12	.00507768		.00709487		
16					
20					
24					

INCHES	6	7	8	9	10
	.62030649				
1	.35828799				
2	.12014671				
4	.02065343				
8					
12					
16					
20					
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1	.05964018	.01244666	.16369661	.11178128	.17989014
2	.09223547	.03124901	.13430162	.09646067	.11978642
4	.12603052	.02012090	.08502735	.01841906	.02767679
8	.02085068	.00390002	.00441858	.00257243	.00126540
12	.00379311		.00237606		
16					
20					
24					

INCHES	6	7	8	9	10
1	.30601544				
2	.10434845				
4	.02065343				
8					
12					
16					
20					
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	2.92380562	3.21618617	2.92380562	4.33941775
1	.50799999	1.02644149	.86118203	.19297115	2.03149656
2	.34999999	.59007688	.41841264	.01169521	1.13684431
4	.18100000	.29792804	.19520543		.52825220
8	.02300000	.03300712	.02134181		.06740637
12	.00500000	.00616917	.00388660		.01217254
16					
20					
24					

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
640	1000	2E	6ϕ	62.902390

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
.100000	.342020	.000010	2.923806	3.216186

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.074000	.044970	.026573
2				.025000	.015134	.008530
3				.130000	.090854	.048731
4				.049000	.031592	.016945
5				.130000	.104376	.067370
6				.246000	.212157	.175512
7						
8						
9						
10						

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1				.095000	.181436	.041928
2				.067000	.127960	.035657
3				.067000	.127960	.035217
4				.088000	.168067	.047286
5				.044000	.084034	.037257
6				.052000	.099312	.047000
7				.052000	.099312	.043947
8				.081000	.154698	.070121
9				.042000	.042017	.057886
10				.022000	.042017	.061679
11				.017000	.032468	.044363
12				.047000	.089763	.134001

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.654000	.499083	.343661	027902	.720970	.001000	.345000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
1102.205236		004266

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
641	.25000000	1.00000000	.00001010	2E

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.13641229	.03792782	.17685550	.04909618	.12627481
1	.31888892	.06933035	.31925774	.12514902	.26273413
2	.46234779	.08395553	.35434960	.12185974	.18904046
4	.21043736	.05294930	.20790279	.06615507	.09030631
8	.07737481	.01334413	.03472333	.00288269	.00547551
12	.02286352		.00104661		
16					
20					
24					

INCHES	6	7	8	9	10
	.06562399	.13981331	.43669037		
1	.12961036	.27551404	.51876338		
2	.14478898	.20818895	.26423727		
4	.04824277	.06925595	.04121728		
8	.00226669				
12					
16					
20					
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1	.01162801	.00146364	.05321279	.02015573	.07488690
2	.07444519	.01283148	.10782634	.05132885	.10795216
4	.06487191	.02474253	.10011928	.03777121	.05655568
8	.03914305	.00357479	.02618262	.00288269	.00367405
12	.00701482		.00104661		
16					
20					
24					

INCHES	6	7	8	9	10
1	.06729355	.12234446	.30575207		
2	.08877192	.12978530	.18104060		
4	.03407478	.04689780	.02695288		
8	.00226669				
12					
16					
20					
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.00000000	1.58750000	1.00000000	2.09540523
1	.68199999	.96473715	1.26990739	.30800000	2.32724794
2	.51599999	.84898184	.89550972	.09500000	1.92376831
4	.25499999	.40098607	.32372032	.00900000	.79546682
8	.05200000	.07772390	.04942704		.13606717
12	.00600000	.00806142	.00523200		.02391012
16					
20					
24					

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
641	1000	2E	2841	28.217783

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
.250000	1.000000	.000010	1.000000	1.700000

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.069000	.136412	.052158
2				.019000	.037928	.013832
3				.083000	.176855	.061379
4				.029000	.049096	.017039
5				.068000	.126275	.052738
6				.036000	.065624	.035128
7				.069000	.139813	.098692
8				.197000	.436690	.359627
9						
10						

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1				.034000	.129870	.072254
2				.036000	.137510	.084471
3				.054000	.171887	.110497
4				.047000	.149605	.103153
5				.050000	.159155	.116300
6				.044000	.140056	.100688
7				.042000	.133690	.118679
8				.066000	.126050	.117578
9				.055000	.105042	.105397
10				.033000	.063025	.084875
11				.039000	.074484	.115840
12				.070000	.033422	.121823

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.570000	1.168694	.690594	.023261	.767378	.002000	.428000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
1702.202618		.010202

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
642	.25000000	.86603000	.00001010	2E

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.11862950	.04466954	.17449900	.08840250	.12410297
1	.26187828	.05031830	.31909448	.12016535	.21386513
2	.39097969	.08290000	.36965666	.11720805	.17973545
4	.25080381	.03736846	.29430209	.07336755	.06272249
8	.03942552	.00524310	.02916787	.00398485	.00300043
12	.00980007	.00291733	.00222372		
16					
20					
24					

INCHES	6	7	8	9	10
	.07391947	.14795252	.50596100		
1	.11412345	.25700641	.54381219		
2	.11270110	.18542741	.26445701		
4	.05673696	.03722210	.04706505		
8		.00218981			
12					
16					
20					
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1	.01412283	.00565247	.06236727	.04170489	.07132163
2	.04178816	.00405567	.12001078	.05796579	.09503895
4	.07752033	.01719721	.13129553	.04656304	.04739899
8	.02949485	.00524310	.01542405	.00235035	.00119896
12	.00980007		.00222372		
16					
20					
24					

INCHES	6	7	8	9	10
1	.06183959	.14246664	.33256201		
2	.07648420	.11208668	.18682471		
4	.03786975	.03015063	.02411806		
8		.00218981			
12					
16					
20					
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.15469441	1.83307737	1.15469441	2.35789626
1	.63999999	1.02879379	1.32822799	.29675645	2.17702006
2	.46699999	.77046477	.81474444	.07620982	1.77927519
4	.24399999	.41673232	.31668569	.00461877	.86420729
8	.03700000	.05590112	.03610540		.08301157
12	.00400000	.01202379	.00753462		.01494112
16					
20					
24					

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
842	1000	2E	8ϕ	32.582916

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
.250000	.866030	.000010	1.154694	1.962980

SLAB CONFIGURATION CONCRETE

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.066000	.102737	.039282
2				.018000	.038685	.014109
3				.095000	.151121	.052448
4				.043000	.076559	.026570
5				.056000	.107477	.044887
6				.037000	.064016	.034268
7				.069000	.128131	.090446
8				.219000	.438177	.360852
9						
10						

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1				.089000	.169977	.084199
2				.077000	.147059	.094884
3				.080000	.152788	.084991
4				.070000	.133690	.084839
5				.047000	.089763	.087679
6				.042000	.080214	.079889
7				.056000	.106952	.108759
8				.055000	.105042	.105990
9				.025000	.047746	.164245
10				.014000	.026738	.083274
11				.028000	.053476	.167008
12				.020000	.038197	.120278

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.603000	1.106905	.662862	.025233	.747658	.003000	.394000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
1702.205296		.010462

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
643	.25000000	.70711000	.00001010	2E

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.11470902	.04092954	.20334548	.05979602	.15943449
1	.23872975	.04264521	.35618491	.14240607	.23241436
2	.33811650	.05582080	.30541284	.10852868	.17865531
4	.18128031	.04680052	.18374013	.04964286	.05577815
8	.05006189	.00528682	.01391707	.00225441	.00379193
12	.00488791	.00291733	.00364558	.00180146	.00119897
16					
20					
24					

INCHES	6	7	8	9	10
	.08702602	.15891403	.57458148		
1	.16713075	.26675066	.48663252		
2	.11153830	.15050857	.23167682		
4	.04369681	.03656025	.01270562		
8			.00113763		
12					
16					
20					
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1	.01298830		.04845266	.02981068	.08348876
2	.04895910	.00740872	.10905274	.05927417	.10240883
4	.06223627	.02981132	.09775725	.02802220	.03670683
8	.02613999	.00107528	.01135723	.00225441	.00379193
12	.00280745		.00364558		.00119897
16					
20					
24					

INCHES	6	7	8	9	10
1	.08183248	.13350065	.31985163		
2	.06151828	.09039183	.16431557		
4	.03029869	.02833615	.01080866		
8			.00113763		
12					
16					
20					
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.41420712	2.24505380	1.41420712	2.73971391
1	.57799999	.97721031	1.26477424	.26728515	2.20017937
2	.40399999	.69282649	.70108145	.04949724	1.52975507
4	.19200000	.32539160	.24141014	.00141422	.61161887
8	.03400000	.04575649	.03050651		.07644975
12	.00600000	.00765200	.00474025		.01445126
16					
20					
24					

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
643	1000	2E	θφ	39.905789

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
.250000	.707110	.000010	1.414207	2.404152

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.071000	.081112	.031013
2				.018000	.028942	.010555
3				.100000	.143788	.049903
4				.036000	.042282	.014674
5				.074000	.112738	.047084
6				.044000	.061537	.032940
7				.067000	.112370	.079320
8				.249000	.406292	.334594
9						
10						

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1				.090000	.171887	.072221
2				.076000	.145149	.070110
3				.089000	.169977	.081423
4				.084000	.160428	.080864
5				.056000	.106952	.086120
6				.045000	.085943	.080055
7				.058000	.110772	.086556
8				.067000	.127960	.106527
9				.027000	.051566	.150458
10				.019000	.036287	.091252
11				.023000	.043927	.109296
12				.025000	.047746	.131192

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.659000	.989060	.600084	028155	.718437	.001000	.340000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
1702.205236		010681

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
644	.25000000	.34202000	.00001010	2E

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.08813500	.02053153	.22009002	.08531051	.17627450
1	.26003440	.05921955	.23719328	.11698689	.19819527
2	.28847440	.04949789	.19875045	.07885165	.13231081
4	.15122828	.04138571	.10739955	.04115784	.03129359
8	.03503226	.00766940	.01118478		.00758532
12	.00119005	.00124012	.00285433	.00104661	
16					
20					
24					

INCHES	6	7	8	9	10
	.09638003	.23956402	.72016799		
1	.15842066	.22177215	.37497631		
2	.09689575	.13354845	.12724423		
4	.02545255	.02574057	.01142919		
8					
12					
16					
20					
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1	.01367391	.01131857	.05170971	.05041508	.06985792
2	.05935553	.01862274	.08933818	.05065709	.07658134
4	.05410114	.01665822	.05803197	.02713983	.02823391
8	.01471371	.00345786	.00869475		.00758532
12	.00119005		.00117711	.00104661	
16					
20					
24					

INCHES	6	7	8	9	10
1	.08809269	.12469454	.29641875		
2	.05550047	.08184595	.10051927		
4	.01504755	.02242156	.00943518		
8					
12					
16					
20					
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	2.92380562	4.64154142	2.92380562	4.48861373
1	.43099999	.79974296	.95905304	.09356180	1.72036030
2	.30599999	.53534437	.49602603	.00292383	1.10849743
4	.14300000	.23106937	.17233749		.43508727
8	.02500000	.03445164	.02231053		.06147176
12	.00300000	.00341376	.00206973		.00633110
16					
20					
24					

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
644	1000	2E	θφ	45.496685

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
.250000	.342020	.000010	2.923806	4.970469

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.047000	.030144	.011526
2				.011000	.007022	.002561
3				.100000	.075275	.026125
4				.042000	.029178	.010126
5				.081000	.060289	.025180
6				.039000	.032964	.017645
7				.086000	.081936	.057837
8				.323000	.246312	.202845
9						
10						

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1				.093000	.177616	.038080
2				.080000	.152788	.039625
3				.080000	.152788	.040137
4				.091000	.173797	.046604
5				.054000	.103132	.039008
6				.050000	.095493	.040290
7				.070000	.133690	.056684
8				.088000	.168067	.068311
9				.026000	.049656	.067365
10				.015000	.028648	.037183
11				.037000	.070665	.092139
12				.045000	.085943	.110366

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.729000	.563120	.353845	035989	.640094	.001000	.270000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
1702.205236		0.12342

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
645	.50000000	1.00000000	.00001010	2E

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.13003379	.03972371	.14546971	.04487247	.09663529
1	.25574014	.05292158	.31575774	.09805105	.19112944
2	.29414094	.08890883	.32922253	.10955523	.23610056
4	.25721585	.05389693	.20774280	.08593094	.10391558
8	.11445342	.01399707	.02809269	.00942235	.01945166
12	.01363398	.00251048	.00224254	.00100335	.00130797
16			.00124056		
20					
24					

INCHES	6	7	8	9	10
	.06015889	.06996408	.04955818	.19642010	.27287631
1	.10506464	.14809106	.12439470	.43470165	.67117744
2	.09036065	.14384407	.17165919	.34592433	.38117951
4	.06098368	.06535770	.06456157	.12401905	.03171516
8	.01366267	.00546654		.00422661	
12					
16					
20					
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1	.00509766		.02128531	.01478277	.04630640
2	.02903150	.02330219	.07378318	.02677811	.08228570
4	.08065926	.01589661	.09393252	.04067301	.05660647
8	.05856980	.00515218	.01990414	.00577255	.01168413
12	.00712137	.00251048	.00224254	.00100335	.00130797
16			.00124056		
20					
24					

INCHES	6	7	8	9	10
1	.02867699	.02811377	.04896799	.12996929	.44476600
2	.02131346	.05984107	.07155758	.17926356	.28772879
4	.02750199	.04332670	.03070671	.09537545	.02456851
8	.00462612	.00106734		.00422661	
12					
16					
20					
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.00000000	2.40000000	1.00000000	2.07474132
1	.75499999	1.06596619	2.15156413	.29800000	2.69502943
2	.55999999	.94288514	1.52976242	.08800000	2.27889583
4	.30599999	.51624722	.54677040	.00700000	1.06233926
8	.06800000	.11100288	.07773280		.20877301
12	.01100000	.01418571	.00888687		.02069832
16	.00100000	.00124056	.00074434		.00124056
20					
24					

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
645	1000	2E	2541	29.051208

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
.500000	1.000000	.000010	1.000000	2.400000

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.069000	.130034	.035217
2				.024000	.039724	.010262
3				.069000	.145470	.035761
4				.025000	.044872	.011031
5				.051000	.096635	.028588
6				.034000	.060159	.022810
7				.039000	.069964	.034982
8				.025000	.049558	.028909
9				.110000	.196420	.147315
10				.129000	.272876	.250137

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1				.037000	.141329	.073633
2				.048000	.183346	.096181
3				.065000	.206901	.119171
4				.051000	.162338	.108971
5				.039000	.124141	.079852
6				.041000	.130507	.102397
7				.042000	.133690	.103955
8				.063000	.120321	.108508
9				.054000	.103132	.101077
10				.041000	.078304	.093206
11				.039000	.074484	.112323
12				.055000	.026260	.086715

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.575000	1.105713	.605013	021007	.789926	.001000	.424000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
2402.202618		018267

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
648	.50000000	.86603000	.00001010	2E

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.12255650	.01142002	.14339450	.05158301	.08304400
1	.24797676	.07478553	.27620520	.09211968	.17655496
2	.36583470	.04521195	.34844375	.11933671	.14901912
4	.26495706	.05054408	.21651187	.05792568	.09128004
8	.07114462	.00605781	.02588158	.01089012	.02748651
12	.02871766	.00228792	.00500571	.00100335	
16	.00100013				
20					
24					

INCHES	6	7	8	9	10
	.05976401	.05841954	.08517853	.20415901	.39757149
1	.09792231	.16689509	.10664138	.39572640	.65047780
2	.07767033	.12541313	.10447309	.35412867	.35095691
4	.04455229	.05829458	.03453062	.11654548	.04378362
8	.01373712	.00396614	.00152890	.00631125	
12	.00248664				
16					
20					
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1	.00164001	.00681061	.03969964	.00588308	.05033732
2	.02873394	.00732706	.07892016	.04070721	.05344124
4	.08168150	.01921791	.09994084	.02713794	.04859870
8	.03364446	.00331425	.01916806	.00878292	.00532655
12	.01349941	.00124811		.00100335	
16	.00100013				
20					
24					

INCHES	6	7	8	9	10
1	.02232990	.06718273	.03568733	.13920020	.43571663
2	.03247355	.04561608	.05342772	.17326301	.26894560
4	.02450044	.02814256	.01983777	.08405545	.03980342
8	.00573712	.00102513	.00152890	.00631125	
12	.00248664				
16					
20					
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.15469441	2.77126658	1.15469441	2.30069734
1	.69999999	1.08969696	2.14264551	.28520953	2.57051462
2	.49899999	.85329193	1.38049713	.07043635	2.11092473
4	.28699999	.47638061	.50858827	.00346409	.98238940
8	.05700000	.08483864	.06489565		.16700404
12	.01300000	.01823750	.01225848		.03950128
16	.00100000	.00100013	.00059878		.00100013
20					
24					

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
646	1000	2E	θφ	33.545268

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
.500000	.866030	.000010	1.154694	2.771267

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.061000	.106138	.028746
2				.008000	.009890	.002555
3				.074000	.124184	.030529
4				.029000	.044672	.010982
5				.053000	.071919	.021276
6				.031000	.051757	.019625
7				.037000	.050593	.025296
8				.043000	.073767	.043031
9				.108000	.176808	.132606
10				.172000	.344309	.315616

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1				.091000	.173797	.077853
2				.077000	.147059	.088819
3				.085000	.162338	.100206
4				.089000	.169977	.101039
5				.050000	.095493	.093605
6				.046000	.087853	.083435
7				.048000	.091673	.091969
8				.060000	.114591	.119438
9				.014000	.026738	.089885
10				.016000	.030558	.100483
11				.019000	.036287	.127510
12				.021000	.040107	.129466

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.616000	1.054037	.630261	025393	.746063	.002000	.382000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
2402.205236		020611

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
647	.50000000	.70711000	.00001010	2E

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.12895847	.02196753	.14014649	.04460402	.06507353
1	.17224141	.05284976	.23116271	.07861025	.14543977
2	.25737720	.07042720	.26756917	.08173348	.13749343
4	.28638216	.05246885	.15082790	.03969996	.07998456
8	.06023987	.00646698	.03750426	.00248441	.00583425
12	.01726587				
16					
20					
24					

INCHES	6	7	8	9	10
	.05205653	.10354852	.07886903	.27590148	.46178302
1	.11130337	.12461035	.11036493	.39661532	.66630981
2	.07767621	.10683294	.10949880	.27000342	.28076246
4	.04990729	.06747366	.04126319	.10490893	.02509056
8	.00447486	.00112006		.00122540	.00100832
12		.00137892			
16					
20					
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1	.00565247	.00907950	.02244684	.00618216	.04595485
2	.01714059	.02503185	.07448737	.02786138	.06484126
4	.06140822	.01335703	.08703889	.01447895	.04242823
8	.02091402	.00223241	.02010040	.00248441	.00583425
12	.01726587				
16					
20					
24					

INCHES	6	7	8	9	10
1	.03901633	.03129582	.02935038	.14484539	.42736475
2	.03898414	.05274612	.05777192	.14579060	.21295518
4	.02574647	.04077550	.02898111	.08285201	.02509056
8	.00447486	.00112006		.00122540	.00100832
12		.00137892			
16					
20					
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.41420712	3.39409710	1.41420712	2.72429535
1	.61999999	1.01574577	2.01283246	.25455729	2.34406496
2	.44099999	.76286503	1.16205609	.04525464	1.70462895
4	.24499999	.42357118	.46173280	.00141422	.89942127
8	.04100000	.05939414	.04295236		.12035842
12	.00500000	.01864479	.01201815		.01864479
16					
20					
24					

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
847	1000	2E	θφ	41.084426

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
.500000	.707110	.000010	1.414207	3.394097

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.059000	.091188	.024697
2				.013000	.015533	.004013
3				.074000	.099099	.024362
4				.023000	.031540	.007754
5				.037000	.046014	.013612
6				.025000	.036810	.013957
7				.054000	.073220	.036610
8				.042000	.055769	.032532
9				.131000	.195093	.146320
10				.205000	.326531	.299320

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1				.084000	.160428	.065170
2				.070000	.133690	.069680
3				.082000	.156608	.080630
4				.113000	.215814	.110599
5				.043000	.082124	.060604
6				.059000	.112681	.100149
7				.059000	.112681	.102004
8				.066000	.126050	.110385
9				.018000	.034377	.069862
10				.021000	.040107	.108438
11				.014000	.026738	.068831
12				.034000	.064935	.205626

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.663000	.970797	.603177	029989	.700099	.001000	.336000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
2402.205236		022616

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
648	.50000000	.34202000	.00001010	2E

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.09280549	.03014851	.12142847	.04276451	.10884303
1	.22749896	.02358982	.24024053	.07201241	.13159813
2	.21687409	.06287257	.21289493	.06336517	.13084564
4	.20562028	.03952867	.12609721	.03054613	.05714739
8	.04264626	.00940072	.03012007		.00575470
12	.01103777		.00408923		.00378042
16					
20					
24					

INCHES	6	7	8	9	10
	.05575852	.07864150	.08151901	.29904701	.72942797
1	.08739966	.16275609	.10437456	.32355492	.56327079
2	.07088459	.12896248	.09237517	.21684960	.13452710
4	.02120593	.03920465	.01523992	.03809095	.00913791
8	.00332386	.00205038	.00601387	.01230548	
12					
16					
20					
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1	.00267470	.00482511	.03793622	.01959316	.05169718
2	.03671326	.02164919	.05918908	.02562972	.07069577
4	.07184947	.02124437	.06196426	.01617276	.04735077
8	.02514564	.00547962	.01499215		.00575470
12	.01103777		.00117187		.00378042
16					
20					
24					

INCHES	6	7	8	9	10
1	.01828928	.05303744	.05072993	.17125827	.41920050
2	.02915374	.06550522	.03621379	.13184610	.11481157
4	.01686667	.03127697	.01002726	.02696257	.00913791
8	.00212575		.00168003	.00316153	
12					
16					
20					
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	2.92380562	7.01713350	2.92380562	4.48814974
1	.48099999	.91403216	1.67943168	.08479037	2.02108623
2	.33999999	.59140744	.78783396		1.33045135
4	.17700000	.31285302	.27714634		.58181906
8	.03500000	.05833943	.04329251		.11161534
12	.00800000	.01599005	.01033451		.01890742
16					
20					
24					

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
648	1000	2E	θφ	43.059912

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
.500000	.342020	.000010	2.923806	7.017133

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.048000	.031741	.008597
2				.015000	.010311	.002664
3				.066000	.041531	.010210
4				.027000	.014626	.003596
5				.054000	.037226	.011013
6				.028000	.019071	.007231
7				.036000	.026897	.013448
8				.044000	.027881	.016264
9				.120000	.102280	.076710
10				.296000	.249479	.228689

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1				.108000	.206264	.043430
2				.056000	.106952	.025162
3				.085000	.162338	.041492
4				.107000	.204354	.051705
5				.060000	.114591	.047111
6				.051000	.097403	.041812
7				.071000	.135600	.062552
8				.074000	.141329	.067653
9				.018000	.034377	.040617
10				.023000	.043927	.067454
11				.034000	.064935	.098332
12				.047000	.089763	.135408

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.734000	.561044	.378421	037737	.622619		.266000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
2402.205236		025706

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
649	1.00000000	1.00000000	.00001010	2D

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.08124231	.10869922	.06275699	.03224610	.06818598
1	.23681254	.21326469	.09071019	.05557648	.11148611
2	.19895661	.22317153	.11161871	.06884072	.13251699
4	.27972022	.20585540	.08733653	.03847212	.06012330
8	.07148090	.06454975	.01031824		.00398780
12	.04690727	.01044587	.00998789		
16				.00124341	.00111717
20					
24					

INCHES	6	7	8	9	10
	.03771169	.04128657	.04044969	.21512749	.71091921
1	.05178824	.09852340	.09312762	.32123116	.64459657
2	.05760874	.14090836	.10001190	.32579208	.28438239
4	.04366043	.07690108	.03157519	.15540157	.08707448
8	.00318083	.00530705	.00153090	.00844284	.00248278
12		.00119775			
16					
20					
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1	.00659863	.01736400	.02004356	.00403842	.03581566
2	.02441117	.03289773	.03182346	.03539934	.04471869
4	.07143984	.07285182	.02896029	.01328837	.01571402
8	.03853032	.04227781	.00646278		.00275620
12	.01127764		.00618550		
16					.00111717
20					
24					

INCHES	6	7	8	9	10
1	.01977421	.03295393	.03217704	.09225315	.36184253
2	.01422175	.04704977	.04346679	.17097353	.21523678
4	.02129231	.03867732	.01716754	.09075907	.07664985
8	.00318083	.00530705	.00153090	.00723636	.00248278
12		.00119775			
16					
20					
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.00000000	3.79999999	1.00000000	2.30029841
1	.61599999	.88186112	2.76401495	.25900001	2.17611702
2	.44299999	.72719901	1.84000157	.06700000	1.71080802
4	.25699999	.45080043	.80749356	.00399999	1.07012032
8	.06300000	.10976504	.10224524		.17128110
12	.01300000	.01866089	.01396545		.06853879
16	.00100000	.00111717	.00134672		.00236058
20					
24					

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
649	1000	2D	2541	32.384939

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
1.000000	1.000000	.000010	1.000000	3.800000

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.045000	.081242	.013683
2				.060000	.108699	.016877
3				.032000	.062757	.011726
4				.018000	.032246	.007722
5				.033000	.068186	.021532
6				.020000	.037712	.013894
7				.028000	.041287	.019557
8				.017000	.040450	.023418
9				.103000	.215127	.158515
10				.327000	.710919	.636086

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1				.048000	.183346	.113043
2				.049000	.187166	.118003
3				.072000	.229183	.157322
4				.047000	.149605	.102057
5				.060000	.190985	.154322
6				.051000	.162338	.149649
7				.050000	.159155	.139408
8				.067000	.127960	.122409
9				.053000	.101222	.131447
10				.052000	.099312	.154533
11				.051000	.097403	.153234
12				.083000	.039629	.166003

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.
NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.683000	1.398625	.923009	0.36462	.635366		.317000
		MEAN ENERGY SCAT.TR.NT.		MEAN ENERGY REFL. NT.		
3803.402618				0.53385		

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
650	1.00000000	.86603000	.00001010	2D

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.09297102	.10731599	.07260051	.02372804	.03849349
1	.20531318	.19284314	.06161067	.04112746	.08432176
2	.21314463	.25507964	.11475112	.08923431	.07555763
4	.19878376	.19778503	.07810584	.04822411	.05410164
8	.09066679	.04277182	.02498157	.00562418	.00743487
12	.00700099	.00530018			
16	.00409451				
20					
24					

INCHES	6	7	8	9	10
	.03815803	.06804703	.06081751	.26075997	.67130850
1	.06512531	.14298344	.09832733	.50112068	.66747150
2	.05205837	.11016628	.06297364	.31626677	.29708916
4	.02235297	.08714825	.03083679	.09566466	.06516008
8	.00283170	.00947285	.00239922	.01201320	
12	.00112177			.00109387	
16					
20					
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1	.00129380	.00905046	.01716359	.01406250	.01967129
2	.02180328	.03741096	.01969342	.03013949	.03692425
4	.04441500	.07634232	.03877948	.01585971	.02321663
8	.03216001	.02351268	.01797318	.00410080	.00596937
12	.00568245	.00359553			
16	.00117718				
20					
24					

INCHES	6	7	8	9	10
1	.01463381	.02867010	.03871347	.13124443	.40040088
2	.01084128	.05020173	.02372792	.19249560	.20480854
4	.01124283	.03147393	.01821116	.08117230	.04264702
8	.00283170	.00324513	.00239922	.01201320	
12	.00112177			.00109387	
16					
20					
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.15469441	4.38783875	1.15469441	2.52528593
1	.58299999	.91739016	2.94275659	.24248582	2.30273029
2	.40699999	.67885303	1.73984328	.05080656	1.63712811
4	.23999999	.38451508	.63438136	.00115470	.87931783
8	.06300000	.10420529	.10645752		.19819620
12	.01000000	.01149362	.01009291		.01451680
16	.00100000	.00117718	.00073003		.00409451
20					
24					

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
650	1000	2D	θφ	37.394708

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
1.000000	.866030	.000010	1.154694	4.387839

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.057000	.080516	.013560
2				.052000	.092939	.014430
3				.028000	.062874	.011748
4				.013000	.020549	.004921
5				.021000	.033336	.010527
6				.016000	.033046	.012175
7				.040000	.058931	.027915
8				.037000	.052670	.030493
9				.127000	.225826	.166398
10				.321000	.581373	.520176

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1				.109000	.208174	.115321
2				.082000	.156608	.105075
3				.097000	.185256	.128773
4				.107000	.204354	.133102
5				.051000	.097403	.122518
6				.058000	.110772	.134161
7				.072000	.137510	.147418
8				.048000	.091673	.093202
9				.030000	.057296	.197057
10				.026000	.049656	.188793
11				.012000	.022918	.070157
12				.020000	.038197	.115881

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.712000	1.242060	.812343	.038704	.612944	.002000	.286000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
3803.405236		.54360

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
651	1.00000000	.70711000	.00001010	2D

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.11287602	.09482552	.04729502	.02918001	.06457702
1	.23205044	.28520048	.10208399	.04851072	.06814097
2	.22205364	.20514840	.11017552	.08583058	.06957231
4	.21091741	.19697087	.05712763	.03072234	.04902028
8	.09988512	.03566234	.02390813	.01169011	.01215811
12	.01094409	.00571673	.00120538		.00111879
16					
20					
24					

INCHES	6	7	8	9	10
	.03399304	.09444950	.05689704	.23234903	.69964753
1	.07281082	.11552694	.07460870	.42772881	.61928961
2	.05530696	.11945071	.07914460	.29599589	.24017052
4	.03185436	.06398681	.03161434	.10518249	.05200473
8	.00107770	.00397618	.00321166	.00968741	.00250144
12		.00386390	.00533777	.00917412	
16					
20					
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1	.00334166	.03437695	.03491431	.01384632	.02841338
2	.01624189	.06012032	.03369154	.02650632	.02411129
4	.05764087	.08284429	.01968668	.00519557	.02912121
8	.05849873	.01978689	.00823033	.00379788	.00915435
12	.00809830	.00107405	.00120538		
16					
20					
24					

INCHES	6	7	8	9	10
1	.01813804	.03074080	.02063826	.15623947	.40435048
2	.02156292	.04374898	.02862784	.15340282	.18591200
4	.00630981	.03463492	.01420447	.07580681	.05055200
8				.00700327	.00250144
12			.00104744	.00180617	
16					
20					
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.41420712	5.37398707	1.41420712	2.83402816
1	.54599999	.95430234	2.87622889	.20930265	2.25525413
2	.36599999	.62503849	1.49594376	.03111256	1.51396168
4	.22499999	.37599663	.61810942		.82940128
8	.06500000	.10897289	.09685746		.20375819
12	.01000000	.01323134	.01379537		.03736079
16					
20					
24					

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
651	1000	20	θφ	45.799011

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
1.000000	.707110	.000010	1.414207	5.373987

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.055000	.079816	.013443
2				.059000	.067052	.010411
3				.024000	.033443	.006248
4				.017000	.020633	.004941
5				.030000	.045663	.014420
6				.016000	.024037	.008856
7				.043000	.066786	.031636
8				.022000	.040232	.023292
9				.121000	.164296	.121060
10				.340000	.494728	.442651

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1				.120000	.229183	.113893
2				.095000	.181436	.097437
3				.082000	.156608	.088745
4				.086000	.164247	.081447
5				.066000	.126050	.126901
6				.060000	.114591	.107372
7				.058000	.110772	.098773
8				.073000	.139419	.109486
9				.030000	.057296	.178975
10				.019000	.036287	.092725
11				.015000	.028648	.085662
12				.023000	.043927	.111476

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.727000	1.036687	.676958	039522	.604765	.001000	.272000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
3803.405236		054363

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
652	1.00000000	.34202000	.00001010	2D

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.05501950	.09069403	.06298798	.02151504	.05669952
1	.13062617	.17404817	.10847120	.05463022	.07599169
2	.17329698	.16175352	.06729356	.02836701	.08144486
4	.14473409	.13894277	.04725675	.01820163	.03663078
8	.06261970	.04868056	.00754441	.02192515	.00248251
12	.01195094	.00809810	.00120549		
16		.00528772			
20					
24					

INCHES	6	7	8	9	10
	.06784352	.08956651	.04960551	.28887451	.92627850
1	.05828819	.10283144	.08026592	.33619668	.53329460
2	.03820666	.09780182	.08810763	.23413346	.16437038
4	.03582732	.07591125	.02476408	.06632089	.03518198
8	.00806443	.01028692		.00823497	.00256937
12					
16					
20					
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1	.00465152	.03434887	.01506513	.01648028	.02434378
2	.03039739	.03368709	.02629599	.01434504	.03126588
4	.04050842	.05364223	.02265377	.00829342	.01262324
8	.02035055	.02678595	.00273702	.01784543	.00248251
12	.00257091	.00646068	.00120549		
16		.00237038			
20					
24					

INCHES	6	7	8	9	10
1	.01460542	.03865209	.03223675	.14416025	.43467169
2	.01459725	.03581502	.03436531	.13778277	.14879390
4	.01179615	.03193235	.01626849	.05031296	.03292155
8	.00420362	.01028692		.00706596	.00256937
12					
16					
20					
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	2.92380562	11.11046136	2.92380562	4.55661262
1	.41099999	.81476810	2.35978371	.05555230	1.71019660
2	.29399999	.50734564	1.15778954		1.13477588
4	.17900000	.28095258	.45205470		.62377156
8	.05000000	.09432733	.10344346		.17240803
12	.00700000	.01023708	.00634209		.02125453
16	.00200000	.00237038	.00142223		.00528772
20					
24					

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
652	1000	2D	$\theta\phi$	33.312731

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
1.000000	.342020	.000010	2.923806	11.110461

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.029000	.018818	.003169
2				.049000	.031019	.004816
3				.031000	.021543	.004025
4				.015000	.007359	.001762
5				.028000	.019392	.006124
6				.034000	.023204	.008549
7				.042000	.030634	.014511
8				.022000	.016966	.009822
9				.134000	.098801	.072801
10				.385000	.316806	.283458

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1				.104000	.198625	.044390
2				.092000	.175707	.051172
3				.096000	.183346	.049556
4				.076000	.145149	.037072
5				.069000	.131780	.064126
6				.078000	.148969	.068863
7				.060000	.114591	.050865
8				.070000	.133690	.058962
9				.035000	.066845	.098678
10				.030000	.057296	.095485
11				.025000	.047746	.068907
12				.034000	.064935	.093126

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.769000	.584541	.409037	045320	.546786	.001000	.230000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
3803.405236		058934

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
653	2.00000000	1.00000000	.00001010	2C

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.10405329	.10505220	.04382491	.05202670	.03689780
1	.17227579	.21677150	.09388101	.13125508	.09955705
2	.24049983	.28378295	.18622010	.13995322	.10371473
4	.34359290	.21578713	.18499850	.12620653	.08185263
8	.20145318	.12617206	.06408944	.04968130	.04212841
12	.05715796	.01554780	.01503988	.00926415	.01445357
16	.01855632	.01014469	.00401696		
20		.01184795	.00140043	.00172707	.00402488
24					

INCHES	6	7	8	9	10
	.02244271	.07020451	.03711228	.14936748	.41716779
1	.05232093	.15615287	.08418724	.28262368	.61874516
2	.06261840	.16955652	.10724587	.26176778	.57271555
4	.06968143	.12835749	.09154740	.23060518	.27307887
8	.04458240	.04589390	.04508994	.09355282	.06948509
12	.00592292	.02799108	.01296910	.01421430	.01661888
16	.00106830	.00374400	.00107037		.00100623
20				.00276211	.00100623
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1	.00181286	.00569796	.00686679	.00787854	.01391887
2	.00265491	.01934792	.02441914	.02012946	.01804706
4	.04214277	.04813798	.04936210	.02744947	.02795629
8	.05585902	.02274293	.02276167	.01692028	.00870236
12	.02749207	.00864777	.01245024	.00230838	.01322910
16	.01123156	.00790365	.00401696		
20		.00147174	.00140043		
24					

INCHES	6	7	8	9	10
1	.01292038	.02921985	.02063015	.06120195	.28640842
2	.01079752	.03293194	.03392203	.11535717	.31025498
4	.01173106	.05321254	.04196590	.11442761	.20108639
8	.01809566	.01889364	.02863612	.04609937	.05660818
12	.00225581	.00939963	.00866782	.00673909	.01081258
16		.00374400	.00107037		.00100623
20					.00100623
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.00000000	4.29230769	1.00000000	1.98978884
1	.82499999	1.03755578	4.21060994	.59100001	2.49877029
2	.68199999	.93686212	3.57855572	.34900000	2.47707494
4	.48999999	.73847212	2.31509808	.12099999	1.86670807
8	.19999999	.30931922	.77484619	.01400000	.79612855
12	.06600000	.10300248	.19496163	.00100001	.19017965
16	.01800000	.02897277	.03328465		.03960688
20	.00300000	.00387839	.00635824		.02276866
24					

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
683	1000	2C	2541	12.632536

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
2.000000	1.000000	.000010	1.000000	4.100000

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.059000	.104053	.016242
2				.050000	.105052	.015117
3				.022000	.043825	.008658
4				.031000	.052027	.016496
5				.022000	.036898	.016199
6				.015000	.022443	.012042
7				.040000	.070204	.047945
8				.023000	.037112	.030776
9				.069000	.149367	.142081
10				.198000	.417168	.417168

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1				.037000	.141329	.089010
2				.042000	.160428	.098963
3				.044000	.140056	.110184
4				.056000	.178253	.142465
5				.048000	.152788	.132692
6				.044000	.140056	.126868
7				.040000	.127324	.113504
8				.041000	.078304	.093567
9				.041000	.078304	.090081
10				.047000	.089763	.128477
11				.033000	.063025	.137741
12				.056000	.026738	.115255

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.529000	1.038150	.722725	024287	.757124	.001000	.470000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
4104.102618		091822

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
654	2.00000000	.86603000	.00001010	2C

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.06753098	.09938502	.07329552	.04281752	.03760550
1	.14009861	.17143832	.14812948	.12904878	.06452793
2	.28085805	.29170188	.17421044	.15215026	.10260539
4	.31555355	.25332107	.15590517	.13872078	.07508434
8	.17124141	.07634607	.08626739	.05754398	.03010136
12	.03818889	.04194920	.02072486	.01663801	.00387109
16	.00832472	.01736372	.02540981		.00287957
20	.00116613				
24					

INCHES	6	7	8	9	10
	.02219052	.10081501	.04296002	.13077251	.43990698
1	.03628973	.20767115	.11820195	.28905080	.63690093
2	.05926187	.16574670	.13403383	.28888232	.53350157
4	.03763013	.14953833	.07862603	.23233259	.26474342
8	.01967642	.06443942	.03716308	.05208197	.03423522
12	.00864934	.01173006	.00209310	.00251499	.00320631
16	.00134010				
20					
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1		.01221176	.00929434	.02100338	.01320571
2	.01391852	.03403671	.02604953	.04313908	.03036159
4	.03820548	.06838950	.04072888	.03531391	.03148255
8	.04977803	.01966904	.02151122	.01618732	.01260163
12	.01040187	.01940149	.00881516	.01053458	.00387109
16	.00182243	.00675654	.00806713		.00105083
20	.00116613				
24					

INCHES	6	7	8	9	10
1	.00352953	.02939702	.02382225	.07655682	.33530929
2	.02532872	.02757070	.03229650	.11908617	.36588534
4	.00746435	.04017719	.02943627	.09468919	.19917618
8	.00854848	.02267145	.02922184	.02903678	.02982361
12	.00143988	.00102241	.00105970	.00251499	.00320631
16	.00134010				
20					
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.15469441	4.95630370	1.15469441	2.17667813
1	.80199999	1.15363855	4.64642886	.62930846	2.57066614
2	.65799999	1.05946242	3.87566525	.34178954	2.52474187
4	.44299999	.68667661	2.07391569	.10161310	1.80306851
8	.15200000	.24713227	.56137869	.00808286	.63717919
12	.03900000	.06226748	.07857496		.14956584
16	.01300000	.01903703	.01780659		.05531792
20	.00100000	.00116613	.00080381		.00116613
24					

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
854	1000	2C	θφ	14.586719

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
2.000000	.866030	.000010	1.154694	4.734247

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.040000	.058484	.009129
2				.059000	.086070	.012386
3				.038000	.063476	.012540
4				.030000	.037081	.011757
5				.024000	.032567	.014298
6				.012000	.019218	.010312
7				.049000	.087309	.059626
8				.028000	.037205	.030853
9				.070000	.113253	.107728
10				.213000	.380973	.380973

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1				.081000	.154698	.082104
2				.079000	.150879	.107154
3				.078000	.148969	.101548
4				.075000	.143239	.103968
5				.043000	.082124	.105929
6				.056000	.106952	.135000
7				.055000	.105042	.135269
8				.046000	.087853	.093776
9				.010000	.019099	.085879
10				.011000	.021008	.082085
11				.018000	.034377	.121433
12				.011000	.021008	.086499

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.563000	.915636	.649602	026336	.736629	.001000	.436000

MEAN ENERGY SCAT.TR.NT.

MEAN ENERGY REFL. NT.
0.93557

4104.105236

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
655	2.00000000	.70711000	.00001010	2C

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.07889001	.10162850	.07987501	.06175402	.06447252
1	.18874367	.16226967	.09693734	.10383242	.10131997
2	.19045049	.18817162	.15014603	.13087980	.10912117
4	.30106826	.22318295	.17463927	.12562081	.07744582
8	.15257359	.13323685	.04225998	.03191849	.04543644
12	.06025476	.03227294	.03354902	.00742993	.00750559
16	.00739093	.00375464			
20					
24					

INCHES	6	7	8	9	10
	.01874354	.06784350	.05279151	.18510900	.53995000
1	.04920989	.13458282	.11127525	.29571469	.72716313
2	.06358563	.15630734	.13559974	.32246959	.55828842
4	.02536285	.13316120	.09779136	.16278890	.24867371
8	.02180690	.03679584	.02603327	.04443898	.03920844
12		.01131771	.00147072	.00641516	.00113188
16					
20					
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1	.00211456	.00831096	.01288223	.01523153	.00692292
2	.01152556	.02731291	.01761985	.02350864	.02062045
4	.04945012	.05925858	.05554145	.04454849	.02362273
8	.06728126	.03479080	.01610622	.01335945	.01982929
12	.02068766	.00426395	.02047058	.00616359	.00477787
16	.00514715	.00375464			
20					
24					

INCHES	6	7	8	9	10
1	.01318780	.02027425	.03122667	.06825147	.36912594
2	.02493957	.03437498	.04000259	.12752791	.34586940
4	.01021185	.05181272	.04386129	.08962429	.17945520
8	.00829055	.01926985	.00696634	.02693684	.03235197
12		.00958159		.00120155	.00113188
16					
20					
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.41420712	6.07021212	1.41420712	2.58828610
1	.75299999	1.21927671	4.94334056	.67174838	2.64279725
2	.59499999	.99149847	3.71957712	.31819661	2.32321644
4	.40899999	.67809709	1.93558955	.07071035	1.64044547
8	.15100000	.24801098	.47577684	.00282841	.57653720
12	.03700000	.06827867	.08585417		.16134771
16	.00500000	.00890179	.00540501		.01114557
20					
24					

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
655	1000	2C	θφ	17.865022

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
2.000000	.707110	.000010	1.414207	5.798249

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.040000	.055784	.008708
2				.057000	.071862	.010341
3				.049000	.056480	.011158
4				.030000	.043667	.013846
5				.029000	.045589	.020015
6				.013000	.013254	.007112
7				.034000	.047973	.032762
8				.025000	.037329	.030956
9				.093000	.130892	.124507
10				.236000	.381804	.381804

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1				.086000	.164247	.080284
2				.077000	.147059	.085763
3				.081000	.154698	.083967
4				.091000	.173797	.116479
5				.038000	.072574	.061436
6				.064000	.122231	.113110
7				.043000	.082124	.073226
8				.044000	.084034	.086956
9				.020000	.038197	.122023
10				.021000	.040107	.136849
11				.013000	.024828	.089525
12				.028000	.053476	.174997

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.606000	.884635	.641209	029638	.703609	.001000	.393000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
4104.105236		097816

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
656	2.00000000	.34202000	.00001010	2C

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.06363000	.11210501	.07340353	.05450500	.06317299
1	.15253605	.16728293	.13758881	.14108056	.07641538
2	.17009562	.23494437	.13458840	.11798303	.08286998
4	.20521330	.18342095	.10317730	.09586980	.06047569
8	.16590360	.02869659	.03830539	.02875032	.00873618
12	.03789487	.02604303	.00904998	.00233228	.00112062
16	.01329312	.00826174			
20	.00104574				
24					

INCHES	6	7	8	9	10
	.02659352	.08468654	.07065302	.24350848	.74735850
1	.03455900	.13325033	.10916833	.32083533	.79369980
2	.03738258	.17205687	.15414081	.26715888	.51141845
4	.04277597	.10181858	.07450533	.15479265	.13562783
8	.01357981	.04578816	.02778169	.01673231	.01837765
12	.00254369	.00164307	.00139005		.00139997
16		.00557899			
20					
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1	.00168118	.00797044	.01880880	.05227549	.02726609
2	.01211079	.04463438	.03283602	.03828202	.02115383
4	.04039959	.04973658	.04464569	.04868969	.03018197
8	.04381125	.01431347	.01561295	.01134832	.00658346
12	.01545537	.01418198	.00579650		.00112062
16	.00820280	.00250748			
20	.00104574				
24					

INCHES	6	7	8	9	10
1	.00594783	.02649516	.02850200	.10268881	.51625614
2	.01754631	.04944292	.05944328	.12851825	.34943651
4	.01407469	.03826689	.03262988	.08151602	.10991373
8	.00748444	.02002604	.00959885	.01186189	.01678715
12	.00106965	.00164307	.00139005		.00139997
16		.00557899			
20					
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	2.92380562	12.54987337	2.92380562	4.41119782
1	.61799999	1.41358634	5.57240459	.62569438	2.69211092
2	.45799999	.88789935	3.08161077	.13449507	2.01713404
4	.28899999	.49590234	1.26360379	.00584760	1.16352501
8	.09700000	.15742781	.29598645		.39265171
12	.02400000	.04205720	.04174858		.08341756
16	.00900000	.01628927	.02127425		.02713385
20	.00100000	.00104574	.00070306		.00104574
24					

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
656	1000	2C	θφ	36.935080

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
2.000000	.342020	.000010	2.923806	11.987603

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.038000	.021763	.003397
2				.051000	.038342	.005517
3				.037000	.025105	.004960
4				.034000	.018642	.005911
5				.033000	.021606	.009486
6				.017000	.009095	.004881
7				.043000	.028964	.019781
8				.033000	.024165	.020039
9				.101000	.083285	.079222
10				.309000	.255612	.255612

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1				.081000	.154698	.036489
2				.086000	.164247	.049459
3				.093000	.177616	.051775
4				.091000	.173797	.050135
5				.054000	.103132	.059281
6				.055000	.105042	.057949
7				.058000	.110772	.055323
8				.065000	.124141	.059287
9				.021000	.040107	.062479
10				.026000	.049656	.081091
11				.023000	.043927	.070687
12				.043000	.082124	.146803

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.696000	.526580	.408805	037418	.625804	.001000	.303000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
4104.105236		1.07524

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
657	3.00000000	1.00000000	.00001010	2B

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.08280262	.08129069	.03485982	.02207440	.05151438
1	.16304302	.16997014	.12489011	.07236915	.11890760
2	.25251240	.22458419	.13266436	.15360015	.16284171
4	.34971371	.23732584	.12264189	.10697686	.13156865
8	.19771091	.11506351	.06444101	.04739498	.07590521
12	.10687737	.05066848	.03152219	.02751137	.03356830
16	.02826332	.02522424	.00834263	.00556571	.02067990
20	.01221932	.00466471	.00245626	.00316649	.00491818
24	.00119757	.00213999		.00100137	.00402750

INCHES	6	7	8	9	10
	.10613730	.05847567	.04844200	.21316524	.20974960
1	.18396278	.12153668	.11041124	.22428853	.39447594
2	.22177750	.13773680	.15914649	.22964263	.34219994
4	.20089802	.13612961	.15283406	.17894842	.24200052
8	.12625908	.09412563	.04021937	.05913674	.10063512
12	.03830257	.03730883	.01533732	.02482594	.03239547
16	.01437646	.00880622	.01448440	.02869664	.01895387
20	.01205150	.00685456	.00227342	.01616766	.00269660
24		.00100209		.00148286	

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1	.00403884	.00622358	.00399888	.00344318	.03005172
2	.00298665	.02085753	.01345339	.01783387	.03487585
4	.03167382	.04869200	.02478747	.02425261	.01599635
8	.05578129	.03403109	.01580632	.01316729	.03276486
12	.04575505	.01686860	.01084086	.01018464	.00796751
16	.00790274	.01007818	.00108982	.00301521	.00381651
20	.00402630	.00268935	.00109374	.00103165	.00102398
24	.00119757	.00213999		.00100137	.00402750

INCHES	6	7	8	9	10
1	.03132254	.03803070	.02477228	.02895043	.22049116
2	.04946472	.04570220	.05920837	.06637513	.21253591
4	.06943196	.05506941	.06754170	.07514948	.17480121
8	.05687826	.04794322	.01906508	.04192785	.06559962
12	.01178669	.02676200	.01430859	.02116198	.02675412
16	.00758148	.00476592	.01147033	.02278236	.01895387
20	.00445465	.00577408	.00104801	.00615560	.00269660
24		.00100209		.00148286	

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.00000000	4.78461538	1.00000000	1.85728691
1	.87599999	1.08132332	4.88316185	.69000000	2.37385520
2	.76699999	.99829361	4.25585220	.47500000	2.49170618
4	.57799999	.81339601	3.06645089	.22599999	2.08503760
8	.29199999	.43396489	1.33084837	.05100001	.97189157
12	.13200000	.20339004	.54839750	.01099999	.40931786
16	.05500000	.09345642	.31345873	.00200000	.17539340
20	.01800000	.02999398	.08933452		.06746871
24	.00600000	.01085138	.02189796		.01085138

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
657	1000	28	2541	8.921728

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
3.000000	1.000000	.000010	1.000000	4.600000

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1	.001000	.001187	.000165	.039000	.082803	.011520
2	.001000	.002179	.000279	.050000	.081291	.010426
3				.020000	.034860	.006138
4	.001000	.001011	.000286	.014000	.022074	.006238
5	.001000	.005915	.002572	.031000	.051514	.022398
6				.051000	.106137	.071527
7	.001000	.001011	.000857	.029000	.058476	.049577
8				.032000	.048442	.043177
9	.001000	.001445	.001319	.120000	.213165	.194629
10				.088000	.209750	.200630

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1	.002000	.007639	.004364	.041000	.156608	.091050
2				.031000	.118411	.084016
3				.050000	.159155	.121291
4	.001000	.003183	.000526	.045000	.143239	.104806
5				.036000	.114591	.101124
6				.045000	.143239	.135082
7	.001000	.003183	.004199	.030000	.095493	.090689
8				.043000	.082124	.091383
9				.039000	.074484	.087538
10	.001000	.001910	.000534	.045000	.085943	.108586
11				.022000	.042017	.084128
12	.001000	.000477	.001228	.047000	.022441	.096502

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.
.006000	.005478		.006000	.012747	.005478	0.00138

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.474000	.908512	.616261	0.21768	.780929	.002000	.518000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
4604.402618	0.69122	1.37773

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
658	3.00000000	.86603000	.00001010	28

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.06641199	.07436998	.06591901	.01979251	.05386604
1	.14703821	.13520365	.13146009	.10595580	.12281047
2	.16944656	.16089470	.08695470	.09354892	.14628256
4	.22368888	.25482602	.16112865	.11768498	.13179806
8	.23427803	.18203179	.09236413	.05677595	.10932613
12	.10785919	.04667026	.04328553	.02379776	.03398711
16	.03703688	.03009256	.00418245		.01416454
20	.00651894	.00218784			.00240949
24					

INCHES	6	7	8	9	10
	.08980351	.06325348	.06198148	.22387851	.25285801
1	.20533735	.09100870	.13838745	.23711739	.36071792
2	.27480234	.11978696	.09501015	.25813260	.43057341
4	.23222160	.13057928	.11452567	.22114430	.25554746
8	.08847023	.07202534	.07079083	.08241293	.05518541
12	.02883114	.01043340	.02283129	.02330295	.02831003
16	.00491431	.01345745	.00306796	.00661231	.01206866
20	.00133656		.00122541	.00889568	.00425734
24			.00103053		.00217410

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1		.00902991	.00295067	.00425275	.01504939
2	.00651206	.01502863	.00629247	.02288804	.01827055
4	.02685607	.03960611	.03663341	.02709188	.03312426
8	.05805286	.04095255	.04097543	.03249556	.05325652
12	.03939700	.02417076	.01475305	.01224614	.00781782
16	.00855121	.01326307			.00943182
20	.00408686	.00118770			.00240949
24					

INCHES	6	7	8	9	10
1	.03872548	.01890367	.02051689	.06983367	.20391753
2	.06153483	.04258975	.03671823	.06626939	.29016483
4	.07495943	.03688892	.05937253	.11830185	.20966356
8	.03616533	.04104028	.04378427	.04752263	.05134538
12	.01961057	.00241822	.01080969	.01211801	.02487386
16	.00240070	.00140106	.00306796	.00228557	.00962007
20					.00425734
24			.00103053		.00217410

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.15469441	5.52476864	1.15469441	2.06950282
1	.84999999	1.13488601	5.19555893	.75170605	2.42674309
2	.72899999	1.05585920	4.59611977	.48959044	2.32502332
4	.56999999	.86918833	3.29539886	.20669030	2.04983518
8	.29399999	.48254102	1.31980798	.03695023	1.08061098
12	.10600000	.17398860	.39940706	.00577347	.37508213
16	.03400000	.05117616	.11621182	.00115470	.12675185
20	.01000000	.01194139	.02828273		.02683126
24	.00300000	.00320463	.01453791		.00320463

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
668	1000	28	θφ	10.301870

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
3.000000	.866030	.000010	1.154694	5.311594

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.039000	.057515	.008002
2				.042000	.064407	.008261
3				.030000	.057088	.010052
4				.012000	.017141	.004844
5				.029000	.046650	.020282
6				.058000	.077773	.052412
7				.034000	.054779	.046443
8	.001000	.000885	.000788	.036000	.053678	.047843
9				.116000	.193885	.177026
10	.002000	.001953	.001868	.109000	.218983	.209462

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1	.002000	.003820	.003122	.089000	.169977	.098842
2				.075000	.143239	.100485
3				.056000	.106952	.071604
4	.001000	.001910	.001952	.073000	.139419	.101905
5				.039000	.074484	.089652
6				.039000	.074484	.086039
7				.045000	.085943	.094733
8				.035000	.066845	.086639
9				.017000	.032468	.119336
10				.014000	.026738	.106171
11				.014000	.026738	.102619
12				.009000	.017189	.058530

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.
.003000	.002657		.003000	.002838	.002657	0.00248

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.505000	.841898	.584628	024107	.756443		.492000

		MEAN ENERGY SCAT.TR.NT.		MEAN ENERGY REFL. NT.	
4604.405236		247874		143210	

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
859	3.00000000	.70711000	.00001010	28

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.10438502	.07852452	.04647700	.03042453	.04354803
1	.13250608	.13501720	.11209235	.10121844	.09589579
2	.21848516	.15224970	.19313891	.12782302	.15328768
4	.20246125	.19770726	.14966199	.09288773	.11622434
8	.17127109	.19853313	.08239031	.07747262	.10740280
12	.07086292	.03845774	.03331346	.01244184	.02426254
16	.03656187	.02380519	.00356636	.00151685	.00846868
20	.01969954	.01198903	.00120887		.00141546
24				.00372638	.00114810

INCHES	6	7	8	9	10
	.11191798	.09179452	.06367853	.26610449	.24501047
1	.21879737	.17867488	.13119806	.33903638	.47718393
2	.26239212	.16846119	.12552892	.29989984	.44041538
4	.22998688	.13835820	.12002619	.17891397	.23535110
8	.14490511	.08355254	.05537101	.06952018	.05656294
12	.03394967	.03381977	.03184494	.02101001	.00951481
16	.00515037	.00342159	.00823246	.00148169	.00232357
20	.00899962		.00122541	.00889561	.00101857
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1	.00211456	.00255437		.00725210	.00864714
2	.00226354	.01793721	.02029366	.01736505	.01434138
4	.02577159	.04097342	.05052722	.03221227	.03357495
8	.03959017	.06363101	.04709944	.02062375	.03590786
12	.01909542	.00744134	.02080341	.00327691	.00246122
16	.00815933	.00867945	.00356636		.00657392
20	.00552253	.00800000	.00120887		
24				.00372638	.00114810

INCHES	6	7	8	9	10
1	.03468306	.04731016	.03730816	.10060184	.28896367
2	.06842770	.05191204	.04453158	.13073407	.32900045
4	.07499493	.07284869	.05835668	.08879728	.20382073
8	.04666379	.03857814	.02954537	.04416286	.04825635
12	.01530721	.01998467	.01467615	.01818229	.00951481
16	.00515037	.00342159	.00591646	.00148169	.00232357
20	.00766306				.00101857
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.41420712	6.76643716	1.41420712	2.45165623
1	.83199999	1.36523148	6.28704016	.83579642	2.75741688
2	.70499999	1.19036497	5.16114391	.49355829	2.63524019
4	.51699999	.85441103	3.11394151	.17253327	1.83411217
8	.25799999	.43385865	1.11979513	.01979890	1.06678065
12	.08400000	.13215764	.36150848	.00141422	.31089190
16	.02900000	.04527274	.09561278		.09452863
20	.01100000	.02341304	.03963612		.05445211
24	.00200000	.00487448	.00841184		.00487448

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
689	1000	28	θφ	12.617172

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
3.000000	.707110	.000010	1.414207	6.505353

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.053000	.073812	.010269
2				.043000	.055525	.007122
3				.029000	.032864	.005787
4	.001000	.004183	.001182	.017000	.021513	.006080
5	.001000	.000873	.000379	.023000	.030793	.013388
6				.056000	.079138	.053332
7				.046000	.064909	.055031
8				.034000	.045028	.040133
9				.120000	.188165	.171803
10				.119000	.173249	.165717

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1				.075000	.143239	.063002
2	.001000	.001910	.000725	.070000	.133690	.074300
3				.059000	.112681	.059591
4				.091000	.173797	.107684
5				.049000	.093583	.094069
6				.038000	.072574	.073396
7				.044000	.084034	.079411
8				.050000	.095493	.087622
9				.011000	.021008	.061769
10	.001000	.001910	.002257	.013000	.024828	.083093
11				.018000	.034377	.111816
12				.022000	.042017	.113917

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.
.002000	.001562		.002000	.005055	.001562	0.00024

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.540000	.764998	.528663	0.25556	.744195	.001000	.457000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
4604.405236	0.35498	1.41978

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
660	3.00000000	.34202000	.00001010	28

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.06291202	.07065753	.07653151	.03208352	.04762001
1	.15332852	.15550400	.09781706	.11004467	.12679491
2	.18999398	.21376399	.08442326	.10027948	.10331137
4	.21707039	.19636445	.09279699	.09799080	.12501036
8	.12090315	.06606418	.04540956	.02417197	.05476753
12	.10244853	.05956993	.01388863	.00670966	.02075227
16	.01780551	.01392990	.00580138	.01361066	.00332421
20	.01052707	.00204288	.00229125		.00108144
24		.00110302			

INCHES	6	7	8	9	10
	.16102953	.12243152	.10317402	.25811452	.42239302
1	.22761940	.19438589	.15094484	.36269002	.57981425
2	.26814410	.19046208	.14358369	.32029076	.44298711
4	.25060394	.13707052	.15047380	.18110560	.14878543
8	.06895047	.03729598	.03890221	.03012948	.02313956
12	.03382474	.02265862	.00842733	.01129309	.00974131
16	.00985701				.00118879
20					.00329621
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1	.00177271	.00800000	.00992673	.02971954	.03696383
2	.01108077	.02714890	.01233332	.01874617	.02620743
4	.03814784	.03211092	.01847948	.02127956	.03941299
8	.03879058	.01290985	.01827264	.00363785	.03278019
12	.01409577	.01681916	.00612181	.00344258	.00599430
16	.00691182	.01083016	.00228991	.00500153	.00217891
20	.00376984		.00229125		.00108144
24		.00110302			

INCHES	6	7	8	9	10
1	.05968000	.06690160	.05158925	.12189093	.40398353
2	.08393038	.07763768	.06142018	.16413410	.34977272
4	.08866454	.05610554	.08047505	.11536018	.14255820
8	.03930551	.01904864	.02909062	.01882639	.02313956
12	.01408803	.00820040	.00363711	.00739912	.00752218
16	.00423423				.00118879
20					.00329621
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	2.92380562	13.98928537	2.92380562	4.23065192
1	.67799999	1.77575060	7.93245871	.98532250	3.14426607
2	.53499999	1.16280169	4.87449343	.33039005	2.38762986
4	.36499999	.66767996	2.32845660	.03508567	1.63235794
8	.14600000	.23580183	.61611229		.50973407
12	.06100000	.08732046	.19780981		.28931413
16	.02000000	.03263535	.04134746		.06551746
20	.00700000	.01043874	.02126579		.01923885
24	.00100000	.00110302	.00066181		.00110302

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
660	1000	28	θφ	26.085399

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
3.000000	.342020	.000010	2.923806	13.449506

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.037000	.021517	.002994
2	.001000	.000422	.000054	.040000	.024166	.003100
3				.042000	.026175	.004609
4				.018000	.010973	.003101
5				.030000	.016287	.007081
6				.085000	.055075	.037116
7				.063000	.041874	.035502
8				.043000	.035288	.031452
9				.112000	.088280	.080604
10				.181000	.144467	.138186

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1				.086000	.164247	.036397
2				.077000	.147059	.041628
3				.078000	.148969	.044735
4	.001000	.001910	.000103	.097000	.185256	.053298
5				.032000	.061115	.028038
6				.060000	.114591	.056711
7				.073000	.139419	.064450
8				.061000	.116501	.058104
9				.014000	.026738	.049052
10				.019000	.036287	.058821
11				.025000	.047746	.073512
12				.029000	.055386	.091755

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.
.001000	.000054		.001000	.000422	.000054	

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.651000	.464103	.343744	032675	.673240		.348000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
4604.405236	000055	150576

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
661	5.00000000	1.00000000	.00001010	2A

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.05023261	.06845859	.03040113	.01863898	.03209871
1	.13652331	.13112557	.08677351	.03954138	.09484764
2	.20531654	.14968188	.08503157	.07636322	.10274036
4	.18531341	.18322612	.07831211	.10955662	.09234068
8	.21287038	.18653187	.08274968	.06026453	.06009332
12	.14644165	.08696995	.06486918	.03820836	.03687632
16	.07115969	.03816450	.01877331	.01634840	.03584377
20	.04666480	.02473730	.00591194	.00412081	.00830688
24		.00626074			

INCHES	6	7	8	9	10
	.05600041	.08598332	.13486859	.10658408	.21730859
1	.09787445	.16032789	.19094887	.18641440	.34658000
2	.19174217	.19958247	.22433547	.18218155	.31425390
4	.14785418	.17358341	.22529044	.16170322	.28438544
8	.12325626	.13726317	.12298399	.11139521	.15790037
12	.06118265	.04822123	.05810619	.02555698	.06447917
16	.03061192	.02260779	.01949984	.02328359	.03654713
20	.01401473	.01481193	.02168998	.00404166	.01089401
24	.00481265	.00315211	.00394514		.00100002

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1		.00511173	.00269632	.00452345	.00453409
2	.00190908	.00742642	.01071923	.00565828	.01142710
4	.01933238	.02864962	.01062657	.01922480	.01528323
8	.03273179	.03854680	.01990163	.01748777	.01434274
12	.03174217	.02686412	.01515031	.01451516	.00557356
16	.01807157	.02487599	.00364821	.00838414	.00709635
20	.00947845	.00798622	.00245878	.00277200	.00239586
24		.00626074			

INCHES	6	7	8	9	10
1	.01050653	.02781208	.02231573	.06200412	.18198510
2	.02596848	.04605684	.05688108	.07953335	.20358377
4	.04092689	.06648696	.09030321	.07513475	.20631262
8	.02675561	.05171832	.06204396	.06856064	.13189540
12	.04233582	.02583673	.04369420	.01725315	.05830567
16	.01193421	.00710744	.01364813	.02081664	.02438410
20	.00120831	.01135664	.00970407	.00404166	.01089401
24	.00481265	.00315211	.00394514		.00100002

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.00000000	5.76923077	1.00000000	1.75112544
1	.89100000	1.04948915	5.79631132	.72800000	2.19895701
2	.78699999	.97916362	5.17510014	.53000000	2.26122912
4	.61599999	.85228103	4.04517158	.28000000	1.92156563
8	.35999999	.54198467	2.21426703	.07799999	1.33330878
12	.19300000	.30327089	1.04505725	.02200000	.65291168
16	.09100000	.14596678	.45440242	.00599999	.31883992
20	.03700000	.06329600	.20042710	.00100001	.15619405
24	.01000000	.01917067	.05384523		.01917067

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
661	1000	2A	2541	7.630170

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
5.000000	1.000000	.000010	1.000000	5.800000

SLAB CONFIGURATION CONCRETE

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.029000	.050233	.005543
2	.004000	.006056	.000616	.041000	.068459	.006964
3				.016000	.030401	.004246
4				.010000	.018639	.004178
5				.022000	.032099	.011069
6	.001000	.005915	.003161	.029000	.056000	.029931
7	.002000	.003030	.002090	.038000	.085983	.059299
8	.002000	.003728	.002764	.072000	.134869	.099989
9				.059000	.106584	.086370
10	.001000	.001011	.000958	.095000	.217309	.206068

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1	.002000	.007639	.004053	.039000	.148969	.091074
2	.001000	.003820	.003015	.027000	.103132	.062265
3	.001000	.003183	.000363	.048000	.152788	.092245
4	.001000	.003183	.002605	.028000	.089127	.058189
5	.001000	.003183	.000409	.043000	.136873	.099119
6				.029000	.092310	.076209
7				.027000	.085943	.088260
8				.035000	.066845	.067836
9	.001000	.001910	.002428	.031000	.059205	.063721
10				.028000	.053476	.073261
11	.002000	.003820	.004289	.034000	.064935	.117832
12	.001000	.000477	.001509	.042000	.020053	.083319

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.
.010000	.009590		.010000	.019741	.009590	0.00256

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.411000	.800575	.513656	017629	.821152	.086000	.493000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
5805.502618	1.27793	2.14459

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
662	5.00000000	.86603000	.00001010	2A

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.07288101	.06302000	.04068954	.03552002	.02984951
1	.16788944	.13467165	.06302151	.06140149	.08719606
2	.17644397	.17948730	.07189868	.09635422	.11141610
4	.30581492	.17100097	.14233481	.08466591	.11198026
8	.21264327	.15019971	.08452398	.09695646	.08630505
12	.14970981	.09808575	.03949453	.03421450	.03660985
16	.03375838	.02169929	.00234741	.00693398	.00135485
20	.01671181	.00571687	.00273651	.00113377	.00105219
24		.00726413		.00136400	

INCHES	6	7	8	9	10
	.05120050	.06895598	.11884200	.10178652	.22454600
1	.10196309	.12233834	.20268264	.18231784	.43091367
2	.18976517	.20539919	.25483669	.21257921	.39742231
4	.20432003	.27586173	.29448859	.18772648	.32687335
8	.12532388	.12966467	.18221327	.06740510	.15697852
12	.04340130	.04903093	.05330576	.01869628	.02770131
16	.02020140	.01356543	.02155234	.01053176	.01570264
20	.00907521	.00408148	.00385582	.00101481	.00362497
24	.00245349		.00179468	.00158207	

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1		.00170102	.00185063		.00105315
2	.00110323	.01244114	.00672846	.00210203	.01296471
4	.02006400	.01774999	.02716546	.01147545	.01754945
8	.05411509	.02891485	.03039767	.02926497	.02134434
12	.02421613	.04206976	.01980533	.01214821	.00529616
16	.01388943	.00916101	.00234741		
20	.01057222	.00358410	.00273651	.00113377	.00105219
24		.00726413		.00136400	

INCHES	6	7	8	9	10
1	.00629276	.02892312	.02472885	.05543996	.24646624
2	.02027727	.04463581	.06280554	.12146890	.25832180
4	.04570118	.06982775	.11233827	.09331090	.26078595
8	.04968226	.03984682	.11101719	.03342647	.12173251
12	.02062090	.01870634	.03590206	.01225005	.02629435
16	.00280001	.00668179	.01242412	.00729165	.01570264
20	.00350393	.00223209	.00385582	.00101481	.00362497
24	.00245349		.00179468	.00158207	

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.15469441	6.66169852	1.15469441	1.92077298
1	.88699999	1.16665895	6.52957990	.80020323	2.35459896
2	.78599999	1.09710222	5.81964916	.55425332	2.44985618
4	.60799999	.94154811	4.48450683	.26557972	2.37064677
8	.33299999	.58094098	2.18224467	.06119881	1.35341271
12	.14400000	.23116561	.66800527	.01385633	.56410636
16	.04600000	.07260845	.24391748	.00230939	.14995687
20	.02000000	.03331041	.07894721		.04900344
24	.00900000	.01445836	.02929303		.01445836

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
662	1000	2A	$\theta\phi$	8.810515

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
5.000000	.866030	.000010	1.154694	6.697228

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.037000	.063117	.006965
2	.004000	.005537	.000563	.036000	.054577	.005552
3				.020000	.035238	.004921
4	.001000	.001069	.000240	.018000	.030761	.006895
5				.022000	.025851	.008914
6	.002000	.001953	.001044	.033000	.044341	.023700
7				.035000	.059718	.041185
8	.001000	.001700	.001260	.066000	.102921	.076303
9	.001000	.001700	.001377	.057000	.088150	.071432
10				.108000	.194464	.184405

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1	.001000	.001910	.000903	.081000	.154698	.085407
2	.001000	.001910	.000208	.049000	.093583	.050603
3	.001000	.001910	.000208	.051000	.097403	.060443
4	.002000	.003820	.001548	.068000	.129870	.087074
5				.034000	.064935	.070840
6	.002000	.003820	.002737	.043000	.082124	.083388
7	.002000	.003820	.002961	.033000	.063025	.068753
8				.033000	.063025	.062820
9				.008000	.015279	.039370
10				.010000	.019099	.074117
11				.011000	.021008	.066712
12				.011000	.021008	.072228

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.
.009000	.004484		.009000	.011958	.004484	0.00146

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.432000	.699138	.430271	0.18539	.813145	.080000	.479000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
5805.505236	0.81208	2.14568

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
863	5.00000000	.70711000	.00001010	2A

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.04540401	.04344005	.03607853	.02688650	.03232353
1	.13423137	.09266452	.05807570	.04153358	.07744039
2	.15626097	.13758877	.09817295	.07687435	.06624863
4	.16921227	.19096984	.11064873	.08113851	.08251020
8	.19201962	.16091124	.05840840	.06212889	.06299858
12	.08036648	.07918483	.02325080	.02997480	.03743083
16	.02829643	.02840373	.00351987	.02175787	.01201910
20	.01303166	.00123214			.00240847
24		.00455453			

INCHES	6	7	8	9	10
	.07570850	.10734149	.14647403	.19019852	.18005250
1	.14718072	.19264274	.23114756	.23088885	.50439432
2	.18221715	.19695684	.24951501	.24727029	.48923454
4	.17295882	.17589275	.26353565	.16604789	.31992238
8	.13773981	.14163812	.13638822	.05757233	.10562401
12	.06519966	.05000928	.04216000	.03310329	.03057811
16	.02520247	.00610915	.01479755	.00101041	.02450575
20	.01212629	.00362829	.00118562	.00260269	.00614351
24	.00102871		.00108495		.00126677

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1				.00281434	
2		.00784442	.01015772	.01041131	.00271076
4	.02552156	.02670712	.02228241	.02560606	.01019049
8	.02959143	.03180934	.02159696	.01749271	.01573209
12	.02055162	.03107951	.00527410	.00703484	.02044259
16	.00620863	.00856535	.00147263	.00496634	.00465121
20	.00862938				.00240847
24		.00455453			

INCHES	6	7	8	9	10
1	.01597341	.02525910	.03447084	.06233252	.29156179
2	.02533673	.06343125	.06087323	.09904729	.32043546
4	.03567248	.04377027	.11276955	.08164698	.26402817
8	.04821915	.06750091	.07981325	.04014253	.08743814
12	.02550372	.02303297	.02805671	.02310295	.02657246
16	.01305606	.00321957	.00921100	.00101041	.01599806
20	.00228941	.00177890	.00118562	.00100184	.00614351
24	.00102871		.00108495		.00126677

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.41420712	8.15888725	1.41420712	2.25503220
1	.84999999	1.33467616	7.46272717	.90226415	2.61246391
2	.72599999	1.17583048	6.26375405	.57558231	2.47592179
4	.53699999	.88153925	4.14256077	.23334418	1.96618121
8	.28099999	.47752011	1.80765752	.03818360	1.15361281
12	.12600000	.21630830	.67223999	.00565682	.47691491
16	.04800000	.06835926	.21610877		.16562233
20	.01500000	.02343713	.06892102		.04235869
24	.00500000	.00793495	.01779598		.00793495

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
663	1000	2A	$\theta\phi$	10.790641

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
5.000000	.707110	.000010	1.414207	8.202401

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.030000	.032106	.003543
2	.002000	.002775	.000282	.024000	.030717	.003125
3				.022000	.025511	.003563
4				.018000	.019012	.004261
5				.016000	.022856	.007881
6	.001000	.000722	.000386	.044000	.053534	.028613
7				.057000	.075902	.052346
8	.001000	.000722	.000535	.083000	.103573	.076787
9				.082000	.134491	.108984
10	.001000	.000873	.000827	.098000	.127317	.120732

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1	.002000	.003820	.001760	.075000	.143239	.063507
2				.074000	.141329	.073854
3	.001000	.001910	.001580	.060000	.114591	.065148
4				.066000	.126050	.069573
5				.032000	.061115	.053390
6				.038000	.072574	.063269
7	.001000	.001910	.000270	.053000	.101222	.094424
8	.001000	.001910	.000270	.033000	.063025	.054642
9				.010000	.019099	.056867
10				.012000	.022918	.066852
11				.014000	.026738	.085679
12				.007000	.013369	.035519

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.
.005000	.002031		.005000	.005093	.002031	000152

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.474000	.625020	.409835	020948	.788990	.089000	.432000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
5805.505236	152540	220968

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
664	5.00000000	.34202000	.00001010	2A

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.03271200	.05195652	.03806852	.04578651	.04220152
1	.11050063	.11843727	.07769863	.06667879	.09556841
2	.18010223	.14571048	.09039050	.10379477	.08506923
4	.16163277	.15639512	.08018856	.04950910	.06168024
8	.08909117	.07388575	.05017377	.03294538	.04448069
12	.04997396	.02477802	.02567519	.01364123	.02489185
16	.02282466	.04560391	.02128873	.00246323	.00896444
20	.00240287	.00514786	.00129450		
24	.00236266		.00263499		.00402750

INCHES	6	7	8	9	10
	.06996348	.12914154	.18699804	.22822698	.40028301
1	.13959017	.16936949	.31671409	.27571331	.61327819
2	.20573981	.17955351	.30740511	.23729599	.46250384
4	.15292897	.13839179	.20321858	.17294307	.23621966
8	.07365678	.07071566	.08938999	.04632789	.06041190
12	.01591532	.02967498	.04993822	.00583281	.01873035
16	.00231042	.01053084	.00645026	.00232028	.00690924
20	.00397278	.00108474	.00372427	.00128089	.00102060
24	.00112575	.00154782			

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1		.00694472	.00290048	.00615014	.00938286
2	.00932194	.02312806	.01658109	.02067166	.00768102
4	.01977561	.04620323	.02020635	.01270584	.01087287
8	.02537993	.01450040	.01614257	.00507370	.01019092
12	.01673248	.00631475	.00683063	.00524548	.00620013
16	.00363682	.01067871	.00343703	.00127577	.00190945
20	.00110930	.00398732	.00129450		
24	.00236266		.00263499		.00402750

INCHES	6	7	8	9	10
1	.02365562	.02804010	.09831837	.11816413	.41880087
2	.04310290	.06048624	.13552196	.09921960	.36468170
4	.03556466	.05442820	.11067905	.10529784	.19954299
8	.01929124	.03106487	.06049652	.03686792	.04667765
12	.00560429	.01292046	.02904406	.00246497	.01748134
16	.00124138	.00914042	.00535784	.00111753	.00574649
20	.00397278	.00108474		.00128089	.00102060
24	.00112575	.00154782			

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	2.92380562	16.86810937	2.92380562	4.09006243
1	.71999999	1.86726053	10.27044267	1.15490324	3.13845220
2	.55599999	1.23358603	6.21248186	.45318987	2.45075534
4	.37399999	.68544798	2.97719524	.07017134	1.48327920
8	.16600000	.26568573	.96164227		.63107899
12	.07600000	.10883861	.34555248		.25905191
16	.02900000	.04354144	.11874055		.12966604
20	.01100000	.01375013	.03093771		.01992851
24	.00600000	.01169872	.02073115		.01169872

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
664	1000	2A	$\theta\phi$	22.309134

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
5.000000	.342020	.000010	2.923806	16.958073

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1	.002000	.000844	.000093	.024000	.011188	.001235
2				.031000	.017770	.001808
3	.001000	.000671	.000094	.021000	.013020	.001818
4				.026000	.015660	.003510
5	.001000	.002023	.000698	.016000	.014434	.004977
6	.001000	.000422	.000226	.039000	.023929	.012790
7	.001000	.000671	.000463	.068000	.044169	.030461
8				.094000	.063957	.047416
9				.093000	.078058	.063254
10				.170000	.136905	.129824

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1				.077000	.147059	.030097
2				.066000	.126050	.036164
3	.003000	.005730	.000609	.092000	.175707	.047630
4				.057000	.108862	.030311
5	.001000	.001910	.000884	.045000	.085943	.039819
6	.001000	.001910	.000179	.063000	.120321	.056179
7				.047000	.089763	.042445
8				.056000	.106952	.049338
9				.020000	.038197	.066150
10	.001000	.001910	.001332	.010000	.019099	.033774
11				.023000	.043927	.058022
12				.026000	.049656	.077474

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.
.006000	.001573		.006000	.004632	.001573	0.00055

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.582000	.419090	.297093	0.29107	.708371	.082000	.330000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
5805.505236	0.45823	2.50060

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
665	14.00000000	1.00000000	.00001010	2

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.03339079	.02509107	.02000581	.02719129	.05063323
1	.10837073	.09539878	.06626504	.03068178	.06198722
2	.14593171	.17322829	.09436129	.06194366	.08053581
4	.14257768	.10239752	.08162642	.08420942	.10268940
8	.14489860	.10919910	.06405754	.03508300	.05711495
12	.09428505	.06686566	.02363645	.04307630	.04267698
16	.03807811	.01433383	.00805844	.00623642	.00864964
20	.03105139	.03141477	.01477377	.00622601	.01157616
24	.00571778	.00309498	.00116203		.00101987

INCHES	6	7	8	9	10
	.07145100	.09234001	.07046066	.03679821	.14119090
1	.16620946	.17267344	.08697160	.10434515	.25567712
2	.11711680	.12461346	.12683470	.09952384	.28907897
4	.17028425	.15123702	.10370408	.09877146	.26315250
8	.07454208	.07289392	.08292060	.04237999	.16829779
12	.03754409	.03818609	.02973243	.03165345	.10873073
16	.01696297	.02678049	.02706013	.00801052	.02656695
20	.01487620	.00596199	.00810353	.00725575	.01201425
24	.00209855	.00496635	.00215065		.00228723

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1				.00320722	.00689659
2	.00246964	.00480224	.00645979	.00919319	.00702263
4	.02205990	.01270429	.01479981	.02305838	.01160189
8	.02003215	.02609320	.03141430	.00471730	.01625589
12	.02294897	.00802826	.00594025	.01137611	.00642621
16	.00667972	.00570359	.00575117	.00353494	.00606424
20	.00723178	.00533450	.00226135	.00337584	.00641413
24	.00571778	.00309498	.00116203		.00101987

INCHES	6	7	8	9	10
1	.03325062	.04281260	.01602043	.01901165	.13503564
2	.02840449	.04489310	.05158251	.03399229	.16677807
4	.04124476	.05267749	.03762923	.04383942	.18849223
8	.02795394	.02307352	.03050177	.02368047	.14940025
12	.00803290	.02043984	.01243479	.01235498	.09309319
16	.00691005	.00620413	.01331847	.00650236	.02546976
20	.00237899		.00810353	.00370547	.00991947
24	.00209855	.00496635	.00215065		.00228723

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.00000000	7.00000000	1.00000000	1.54627713
1	.88300000	.99023476	6.55316994	.73400000	1.88258032
2	.75399999	.89359795	5.63604497	.53800000	1.85116855
4	.58299999	.73710740	4.15990495	.28900000	1.58964976
8	.30299999	.43612279	2.13658939	.08300000	.93438758
12	.16000000	.22507550	1.08254417	.02400000	.54038724
16	.06800000	.09313843	.39063993	.00700000	.18773750
20	.03500000	.05072506	.17200318	.00200000	.14525383
24	.01400000	.02249744	.05871200		.02249744

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
665	1000	2	2541	7.439071

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
14.000000	1.000000	.000010	1.000000	7.000000

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1	.003000	.008547	.000781	.022000	.033391	.003053
2	.002000	.002963	.000250	.020000	.025091	.002115
3	.001000	.001187	.000137	.011000	.020006	.002315
4				.013000	.027191	.005050
5	.001000	.001011	.000289	.025000	.050633	.014467
6	.002000	.002075	.000919	.042000	.071451	.031643
7	.001000	.005915	.003380	.039000	.092340	.052766
8	.002000	.002184	.001342	.038000	.070461	.043283
9				.023000	.036798	.026810
10	.002000	.002307	.002241	.065000	.141191	.137157

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1	.002000	.007639	.002812	.027000	.103132	.046256
2	.002000	.007639	.004299	.027000	.103132	.052352
3	.003000	.009549	.005953	.033000	.105042	.067566
4	.003000	.009549	.004452	.019000	.060479	.041997
5				.031000	.098676	.070229
6				.027000	.085943	.051602
7	.001000	.003183	.000420	.019000	.060479	.037475
8				.031000	.059205	.047154
9	.001000	.001910	.000297	.021000	.040107	.038794
10				.014000	.026738	.039424
11				.018000	.034377	.055451
12	.002000	.000955	.001872	.031000	.014801	.054285

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.
.014000	.009339		.014000	.026189	.009339	0.00189

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.298000	.568553	.318657	0.06798	.930120	.331000	.357000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
7006.802618	1.89229	3.19390

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
666	14.00000000	.86603000	.00001010	2

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.03635654	.03418603	.04321251	.02728752	.03545003
1	.11666781	.09146061	.04065660	.03612479	.06684715
2	.16806002	.16191410	.13266686	.08434534	.08269258
4	.24267823	.12674234	.07349668	.08739453	.12615067
8	.11047097	.10853377	.06702987	.05746626	.04948211
12	.06451808	.05114576	.02295613	.01682069	.00726139
16	.02984911	.01316070	.00335647	.00265661	.00899643
20	.01866771	.01387456	.00461720	.00164619	
24	.00207703		.00212736		.00112395

INCHES	6	7	8	9	10
	.07280501	.10828451	.07826950	.07677003	.15670254
1	.16710870	.18303699	.10061867	.09268088	.33845493
2	.11422722	.17462148	.11583713	.11993215	.34754313
4	.15178898	.17681167	.10074573	.10304171	.25495538
8	.08962784	.04706428	.03563830	.03862353	.10167269
12	.03662747	.04354687	.05127612	.01124788	.04749633
16	.01626450	.01194798	.01386762	.00164144	.01713226
20	.01652723	.01451773	.00501707	.00257004	.00101502
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1		.00124983		.00319994	.00617089
2	.00145790	.01881965	.02068011	.02498550	.01167753
4	.01566250	.03196346	.00924412	.01219906	.02248290
8	.03275054	.02542539	.01759201	.01530075	.01044724
12	.01847110	.01152816	.00693569	.00145122	.00486295
16	.00886347	.00427270	.00105497	.00265661	.00500352
20	.00211748	.00398041	.00134832		
24	.00207703		.00212736		.00112395

INCHES	6	7	8	9	10
1	.03843245	.02941377	.03342000	.01791575	.17906569
2	.03645088	.03670022	.02701864	.05500437	.22128247
4	.04581035	.06108254	.03448413	.03980289	.20374156
8	.02262280	.02445866	.02789802	.02116464	.09387427
12	.01464075	.01781863	.02739946	.00367927	.04329103
16	.00940001	.00943830	.00834206		.01548772
20	.00440515	.00732678	.00216382	.00257004	.00101502
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.15469441	8.08286087	1.15469441	1.78357675
1	.86200000	1.11599972	7.40400717	.80713138	2.04078852
2	.73599999	1.01872285	6.24465400	.56464556	2.06648558
4	.52399999	.75244549	4.18479320	.27597196	1.71977788
8	.24599999	.35735192	1.60133943	.06581758	.77142720
12	.10500000	.16508927	.70132550	.01501104	.36790774
16	.04600000	.06798344	.25506709	.00346409	.12233719
20	.01600000	.02492701	.07854989		.07845276
24	.00500000	.00532834	.00523187		.00532834

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
666	1000	2	$\theta\phi$	8.589853

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
14.000000	.866030	.000010	1.154694	8.082861

SLAB CONFIGURATION CONCRETE

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1	.002000	.001769	.000162	.017000	.031486	.002879
2				.023000	.029606	.002495
3	.002000	.001769	.000205	.018000	.037423	.004330
4				.018000	.023632	.004389
5	.001000	.001069	.000305	.016000	.030701	.008772
6				.043000	.063051	.027923
7				.050000	.093778	.053587
8				.039000	.067784	.041639
9				.035000	.066485	.048439
10				.074000	.135709	.131832

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1	.004000	.007639	.000700	.052000	.099312	.045362
2				.044000	.084034	.047728
3	.001000	.001910	.000583	.044000	.084034	.044652
4				.051000	.097403	.052332
5				.014000	.026738	.027025
6				.032000	.061115	.061789
7				.026000	.049656	.057792
8				.028000	.053476	.049788
9				.011000	.021008	.063843
10				.011000	.021008	.053962
11				.010000	.019099	.060992
12				.010000	.019099	.057890

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.
.005000	.000672		.005000	.004607	.000672	0.00004

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.333000	.579655	.326284	0.08089	.919068	.315000	.347000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
7006.805236	0.10339	3.40087

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
667	14.00000000	.70711000	.00001010	2

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.02988749	.02394052	.03757352	.02045103	.03828103
1	.08016920	.06978754	.05203396	.05887017	.05226209
2	.10907419	.12636922	.05773251	.05959540	.06518945
4	.19195705	.14391370	.08695685	.08728084	.12089791
8	.10998416	.08759836	.05348361	.03424052	.04828969
12	.05940486	.03281793	.01595904	.00603740	.01273587
16	.00666443	.02687425	.00945110	.02078224	.02907225
20	.01045617	.00304469			.01437650
24					.00110051

INCHES	6	7	8	9	10
	.09143951	.11025750	.10151502	.08740197	.18708650
1	.14163595	.16818942	.09588267	.16238473	.31188838
2	.14401804	.19851506	.12565425	.11423121	.36821310
4	.15978706	.18826589	.14676747	.09872220	.30451880
8	.04944290	.05476601	.04284947	.04218012	.10569211
12	.02348707	.03198594	.04206450	.03818427	.03601559
16	.01432539	.01300520	.00697041	.00435425	.01789369
20	.01586341	.00657899	.00113045	.00253792	.00899846
24	.00486896		.00140961		

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1		.00225589	.00124377	.00132612	.00604396
2	.00121107	.00838545	.00617431	.01403311	.01245657
4	.02060555	.01482931	.02512413	.01986692	.02020750
8	.02954428	.02000375	.02719714	.01286381	.01751876
12	.01977298	.00623985	.00448327	.00118381	.00478021
16		.01516748	.00449824	.00366916	.00597664
20	.00129639				.00134658
24					.00110051

INCHES	6	7	8	9	10
1	.02624868	.04638378	.04034100	.05206277	.18200299
2	.03141624	.05121522	.05881606	.06322357	.21869410
4	.04050011	.07228037	.06200509	.05879935	.23889280
8	.02923015	.02254997	.02938006	.02406522	.09851292
12	.01056617	.01717466	.02669017	.01234072	.03501110
16	.00888706	.00906716	.00492569	.00115063	.01789369
20	.00634581	.00453257	.00113045	.00115063	.00768150
24	.00486896		.00140961		

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.41420712	9.89944987	1.41420712	2.14271344
1	.81900000	1.27007255	8.38787923	.91216360	2.10526772
2	.65399999	1.05393587	6.59281784	.58831017	1.95690260
4	.47199999	.81776897	4.46327876	.24465784	1.77372561
8	.22499999	.35329228	1.53144087	.04242620	.67095317
12	.09500000	.14531398	.61280409	.00707104	.30576352
16	.03900000	.07123577	.24448278		.14939321
20	.01700000	.02348392	.10412340		.06298659
24	.00400000	.00737909	.02392412		.00737909

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
667	1000	2	$\theta\phi$	10.520387

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
14.000000	.707110	.000010	1.414207	9.899450

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1				.019000	.021134	.001932
2				.013000	.016929	.001427
3				.019000	.026569	.003074
4				.010000	.014461	.002686
5	.001000	.000873	.000249	.021000	.027069	.007734
6	.002000	.004905	.002172	.048000	.064658	.028634
7				.050000	.077964	.044551
8	.001000	.000873	.000536	.042000	.071782	.044095
9				.040000	.061803	.045028
10				.080000	.132291	.128511

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1	.001000	.001910	.000611	.060000	.114591	.047989
2				.043000	.082124	.037327
3	.001000	.001910	.001024	.039000	.074484	.033056
4	.001000	.001910	.000476	.034000	.064935	.029633
5				.025000	.047746	.032905
6				.030000	.057296	.043405
7				.031000	.059205	.048395
8				.030000	.057296	.055914
9				.010000	.019099	.054319
10				.006000	.011459	.027833
11				.020000	.038197	.106287
12	.001000	.001910	.003538	.014000	.026738	.070546

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.
.004000	.002958		.004000	.006650	.002958	0.00034

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.342000	.514659	.307672	0.08910	.910552	.345000	.309000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
7006.805236	1.18926	3.64755

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
668	14.00000000	.34202000	.00001010	2

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.03529702	.03317504	.02842400	.03335554	.05371703
1	.09190193	.07508411	.05890755	.05046524	.08387710
2	.14072876	.12874505	.06407081	.06824273	.06654578
4	.11761553	.11446979	.06088954	.02016702	.05215111
8	.07902587	.08284092	.03621547	.04133848	.03888718
12	.03216668	.01124488	.01459698	.00187217	.00568737
16	.01230962	.00533606	.00633973	.00411110	.00658895
20	.00545552	.00420498	.00135121		
24	.00328333				

INCHES	6	7	8	9	10
	.09861902	.13805751	.10960752	.10534697	.32058650
1	.19439010	.21566190	.12729769	.12447977	.53827379
2	.16600835	.20537243	.12928666	.11219241	.45700993
4	.10789534	.11988163	.09051048	.07561151	.21220654
8	.04158219	.02863065	.06250023	.02972211	.04361464
12	.03312677	.02791865	.02060112	.01166908	.01654347
16		.00997013	.00924391		.00416726
20	.00101987	.00558750	.00270661		.00561016
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
1		.00350325	.00263133	.00659181	.00895538
2	.01166287	.02401982	.00296502	.01321357	.01636384
4	.01769709	.02716824	.01217067	.01214718	.00970630
8	.02901182	.02178412	.01219277	.01007767	.00774383
12	.01560011	.00798134	.00638323		.00354770
16	.00679855	.00408142	.00261439		.00378312
20	.00545552	.00306323			
24	.00328333				

INCHES	6	7	8	9	10
1	.03357150	.04534010	.06251332	.05937048	.35514932
2	.04946143	.08458561	.07460100	.06198984	.36129373
4	.02840479	.06795886	.05436183	.04851046	.17728979
8	.01837138	.02260027	.03758621	.02115136	.03464689
12	.00603817	.01064044	.01263576	.00536710	.01554110
16		.00345253	.00924391		.00416726
20		.00166497	.00159247		.00441879
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	2.92380562	20.46663937	2.92380562	3.83197452
1	.65899999	1.75884397	11.63850645	1.18121748	2.74155666
2	.47899999	1.17673705	7.06040255	.47658033	2.01478323
4	.27999999	.53143416	2.68661628	.07601894	1.04741744
8	.12900000	.21516634	.73706661		.48435774
12	.05500000	.08373494	.27231488		.17542718
16	.02100000	.03414119	.10266672		.05806677
20	.01000000	.01619499	.05013135		.02593584
24	.00300000	.00328333	.00206602		.00328333

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
668	1000	2	$\theta\phi$	21.750398

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
14.000000	.342020	.000010	2.923806	20.466639

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

2.5400	2.5400	5.0800	10.1600	10.1600	10.1600
10.1600	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1	.003000	.001121	.000102	.019000	.012072	.001104
2				.021000	.011347	.000956
3				.019000	.009722	.001125
4				.016000	.011408	.002119
5				.031000	.018372	.005249
6				.050000	.033730	.014937
7				.070000	.047218	.026982
8				.058000	.037488	.023028
9				.051000	.036031	.026251
10				.123000	.109647	.106514

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1	.002000	.003820	.000122	.061000	.116501	.020301
2				.046000	.087853	.019737
3	.001000	.001910	.000074	.053000	.101222	.023008
4				.069000	.131780	.032496
5				.040000	.076394	.030675
6				.045000	.085943	.036099
7				.035000	.066845	.028482
8				.049000	.093583	.038959
9				.012000	.022918	.029221
10				.015000	.028648	.042446
11				.012000	.022918	.029696
12				.021000	.040107	.066638

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.
.003000	.000103		.003000	.001121	.000103	

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.458000	.327035	.208266	0.13414	.865857	.317000	.222000

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
7006.805236		4.10029

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
19-S	.50000000	1.00000000	.00001010	2E

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.11650538	.01717401	.14640478	.02771718	.10515072
4	.26565290	.03594955	.14143470	.04680805	.06761852
6	.13714716	.02246811	.07375385	.02752002	.03094782
8	.06703582	.00972487	.03028253	.00959944	.00920032
12	.01111495	.00098295	.00388714	.00065468	.00114624
16	.00090459	.00014446	.00036304	.00004882	.00007429
18	.00035881	.00007064	.00012485	.00001883	.00002284
20	.00011822	.00001152	.00003360	.00000756	.00000612
24	.00000524	.00000057	.00000088	.00000027	

INCHES	6	7	8	9	10
	.06119899	.10200811	.11007547	.25093172	.33231918
4	.05597055	.04385498	.02876651	.07472968	.02067057
6	.00995232	.01754164	.01055183	.01219313	.00105155
8	.00398217	.00428603	.00207622	.00236302	.00021344
12	.00043810	.00022512	.00002075	.00017462	
16	.00004236	.00002053	.00000530	.00000976	
18	.00001927				
20	.00000239				
24	.00000036				

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
4	.05445966	.01786808	.06498272	.02488426	.03520317
6	.05555592	.00772110	.03823787	.01895719	.02272665
8	.03148369	.00451900	.01822255	.00542365	.00685257
12	.00676727	.00051121	.00229689	.00034814	.00095003
16	.00049812	.00008262	.00023453	.00004152	.00005886
18	.00020365	.00004487	.00007463	.00001317	.00001407
20	.00006957	.00000732	.00002052	.00000581	.00000524
24	.00000524	.00000057	.00000088	.00000027	

INCHES	6	7	8	9	10
4	.03571341	.02703637	.01687367	.04566977	.02067057
6	.00312722	.01180508	.00724003	.00980658	.00105155
8	.00234746	.00333835	.00131592	.00195526	.00021344
12	.00031123	.00019253		.00013414	
16	.00003135	.00001593		.00000976	
18	.00001618				
20	.00000239				
24	.00000036				

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.00000000	2.40000000	1.00000000	2.19658693
4	.23599999	.35036169	.35925261	.00700000	.78845601
6	.11000000	.17622920	.13780801		.34312742
8	.04706245	.07567188	.05388532		.13876387
12	.00706249	.01151144	.00754123		.01864453
16	.00065622	.00097268	.00063667		.00161315
18	.00022655	.00036657	.00023304		.00061524
20	.00007055	.00011085	.00007051		.00017941
24	.00000513	.00000732	.00000476		.00000732

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
19-S	1000	2E	2541	29.0512084

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
.5000000	1.0000000	.0000101	1.0000000	2.3999999

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

10.1600	5.0800	5.0800	10.1600	10.1600	5.0800
5.0800	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1	.0000034	.0000057	.0000015	.0571250	.1165054	.0315536
2	.0000005	.0000006	.0000002	.0110000	.0171740	.0044366
3	.0000007	.0000009	.0000002	.0772500	.1464048	.0359912
4	.0000002	.0000003	.0000001	.0180625	.0277172	.0068138
5				.0470625	.1051507	.0311071
6	.0000002	.0000003	.0000002	.0260000	.0611990	.0232046
7				.0360000	.1020081	.0510041
8				.0490000	.1100755	.0642107
9				.1250000	.2509317	.1881988
10				.2030000	.3323192	.3046259

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1	.0000007	.0000028	.0000009	.0490625	.1874045	.1201659
2	.0000005	.0000019	.0000006	.0570625	.2179622	.1553144
3	.0000010	.0000031	.0000010	.0651250	.2072989	.1492269
4	.0000005	.0000016	.0000005	.0481250	.1531863	.1221002
5	.0000007	.0000023	.0000007	.0572500	.1822320	.1406005
6	.0000002	.0000007	.0000003	.0551875	.1756669	.1536420
7	.0000005	.0000016	.0000007	.0421250	.1340877	.1094307
8	.0000002	.0000005	.0000002	.0580000	.1107716	.1027486
9				.0651875	.1244987	.1198573
10	.0000005	.0000009	.0000006	.0450625	.0860628	.1206923
11				.0381875	.0729326	.0947466
12	.0000002	.0000001	.0000002	.0691250	.0330047	.1086742

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.
.0000051	.0000023		.0000051	.0000077	.0000023	

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.6495000	1.2694855	.7411463	.2856059	.7143822	.0011333	.3493616

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
24.02202618		.2198660

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
39-S	.50000000	.34202000	.00001010	2E

SLAB CONFIGURATION - CONCRETE

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.10371779	.01793720	.12791043	.06161787	.10634471
4	.17281401	.02562688	.13020374	.03251641	.05079748
6	.08836641	.01336604	.04787328	.01062934	.01467923
8	.04382832	.00704666	.01780757	.00384590	.00404280
12	.00584797	.00060680	.00187790	.00026780	.00035684
16	.00062170	.00005190	.00011938	.00002158	.00001575
18	.00015799	.00001746	.00002811	.00000368	.00000286
20	.00005274	.00000393	.00000988	.00000025	.00000235
24	.00000157		.00000034		

INCHES	6	7	8	9	10
	.05356966	.09938425	.08989404	.25245250	.76649349
4	.02624137	.03136501	.02154751	.03768092	.00170604
6	.00699497	.00878399	.00586073	.00844840	
8	.00272639	.00116703	.00061787	.00248161	
12	.00011172	.00009727	.00005480	.00005595	
16	.00000587	.00000528	.00000297	.00000373	
18	.00000115	.00000089			
20	.00000029				
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
4	.06408835	.00584881	.06371808	.01649229	.03111433
6	.04233607	.00742780	.02756817	.00722443	.00907173
8	.02150458	.00386365	.01076731	.00262708	.00255160
12	.00335145	.00033585	.00124578	.00019222	.00027402
16	.00037317	.00003274	.00008188	.00001561	.00001159
18	.00009540	.00000925	.00001943	.00000368	.00000286
20	.00002884	.00000253	.00000761		.00000194
24	.00000157		.00000034		

INCHES	6	7	8	9	10
4	.01734419	.02110890	.01365775	.03134536	.00119532
6	.00450194	.00478494	.00327500	.00737768	
8	.00203441	.00069872	.00016545	.00215946	
12	.00007790	.00007331	.00003250	.00004571	
16	.00000376	.00000477	.00000087	.00000263	
18	.00000115	.00000089			
20	.00000029				
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	2.92380562	7.01713350	2.92380562	4.53308003
4	.15800000	.26591339	.23585442		.53049936
6	.07043742	.11356776	.08698592		.20500239
8	.02837497	.04637227	.03278956		.08356415
12	.00354283	.00562874	.00367309		.00927706
16	.00032857	.00052703	.00033771		.00084816
18	.00008715	.00013266	.00008427		.00021214
20	.00002588	.00004122	.00002617		.00006945
24	.00000146	.00000191	.00000117		.00000191

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
39-3	1000	2 E	0 φ	43.0599123

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
.5000000	.3420200	.0000101	2.9238056	7.0171334

SLAB CONFIGURATION - CONCRETE

REGION THICKNESSES (CENTIMETERS)

10.1600	5.0800	5.0800	10.1600	10.1600	5.0800
5.0800	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1	.0000012	.0000005	.0000002	.0565549	.0354736	.0096074
2				.0095078	.0061349	.0015849
3	.0000002	.0000001		.0670078	.0437479	.0107547
4				.0333125	.0210745	.0051809
5				.0494375	.0363720	.0107601
6				.0270625	.0183219	.0069470
7				.0501289	.0339914	.0169957
8				.0420000	.0307456	.0179349
9				.1220000	.0863438	.0647579
10				.2920000	.2621561	.2403097

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1	.0000005	.0000009	.0000001	.0777112	.1484171	.0273186
2				.0796992	.1522139	.0372731
3	.0000005	.0000009	.0000001	.0923203	.1763184	.0445778
4	.0000002	.0000005	.0000001	.1045117	.1996022	.0524436
5	.0000002	.0000005	.0000001	.0653789	.1248642	.0537950
6				.0517500	.0988350	.0433029
7				.0687539	.1313100	.0591016
8				.0864414	.1650906	.0742195
9				.0290664	.0555126	.0776882
10				.0221289	.0422630	.0561328
11				.0260625	.0497756	.0704658
12				.0451875	.0863016	.1386565

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.
.0000015	.0000003		.0000015	.0000007	.0000003	

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.7490120	.5743617	.3848332	.3754349	.6245452	.0034641	.2475225

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
24.02205236		.2506201

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
20-S	1.00000000	1.00000000	.00001010	2D

SLAB CONFIGURATION **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.10493546	.12546698	.09284657	.02087714	.03046935
4	.22383539	.15270093	.08855617	.03748091	.04996215
6	.14901467	.10087215	.02577443	.01277236	.02522293
8	.08789686	.05507456	.01281246	.00985239	.00688121
12	.01984704	.00908605	.00221316	.00160245	.00085378
16	.00276822	.00116041	.00026728	.00010219	.00018163
18	.00117297	.00038918	.00003616	.00002704	
20	.00039714	.00005458	.00003294	.00000767	
24	.00001633	.00000259			

INCHES	6	7	8	9	10
	.02923074	.04830934	.03006618	.27949871	.60486578
4	.02702366	.04506057	.05903273	.12959879	.05644518
6	.01460419	.03963432	.01907383	.04366419	.02102412
8	.00686192	.01432808	.00511190	.01373332	.00369302
12	.00079895	.00201582		.00019901	.00013410
16	.00004830	.00009631	.00001891		
18	.00000374	.00004307			
20		.00000405			
24		.00000203			

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
4	.07660533	.05019904	.03635544	.01809213	.03354509
6	.05132802	.03905298	.01012885	.00506281	.00964526
8	.03214114	.02353056	.00644142	.00506410	.00389701
12	.00939944	.00534246	.00138408	.00114868	.00064133
16	.00164900	.00087535	.00011350	.00010219	.00003419
18	.00072202	.00020758	.00002289	.00002148	
20	.00025092	.00004105	.00001230	.00000767	
24	.00001633	.00000259			

INCHES	6	7	8	9	10
4	.01003799	.01976308	.01513674	.07543822	.05011692
6	.00474059	.01934081	.01008586	.02947334	.01889896
8	.00366093	.00835709	.00235618	.01093629	.00353748
12	.00028406	.00159028		.00013610	.00013410
16	.00002027	.00006522	.00001891		
18		.00003709			
20		.00000405			
24		.00000203			

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.00000000	3.79999999	1.00000000	2.28331892
4	.23199999	.38928998	.64431332	.00399999	.87369648
6	.12400000	.19775748	.28579813		.45165721
8	.06212493	.09992221	.11586131		.21624571
12	.01287499	.02006053	.01593327		.03675037
16	.00190624	.00287863	.00198915		.00464325
18	.00067187	.00101105	.00068898		.00167216
20	.00020312	.00031599	.00020871		.00049637
24	.00001367	.00002095	.00001515		.00002095

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
20-S	1000	2D	2541	32.3849393

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
1.0000000	1.0000000	.0000101	1.0000000	3.8000000

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

10.1600	5.0800	5.0800	10.1600	10.1600	5.0800
5.0800	10.1600			

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1	.0000098	.0000159	.0000027	.0553750	.1049355	.0176734
2	.0000019	.0000026	.0000004	.0743750	.1254670	.0194804
3				.0401250	.0928466	.0173476
4				.0101250	.0208771	.0049995
5				.0182500	.0304693	.0096219
6				.0151250	.0292307	.0107692
7	.0000019	.0000020	.0000010	.0301250	.0483093	.0228834
8				.0170000	.0300662	.0174067
9				.1230000	.2794987	.2059464
10				.3210000	.6048658	.5411957

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1	.0000019	.0000074	.0000037	.0563750	.2153361	.1397481
2	.0000019	.0000074	.0000013	.0486250	.1857334	.1320654
3			.0000001	.0513750	.1635313	.1279851
4			.0000001	.0598750	.1905876	.1412882
5			.0000001	.0571250	.1818341	.1348400
6	.0000039	.0000124	.0000027	.0543750	.1730806	.1457929
7	.0000019	.0000062	.0000016	.0592500	.1885982	.1617008
8	.0000019	.0000037	.0000010	.0763750	.1458652	.1432882
9				.0745000	.1422842	.1590796
10				.0612500	.1169786	.1601513
11	.0000019	.0000037	.0000016	.0362500	.0692322	.1193771
12				.0691250	.0330047	.1279241

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.
.0000137	.0000042		.0000137	.0000205	.0000042	.0000005

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.7045000	1.3665662	.8673243	.3683122	.6316745	.0014062	.2940801

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
38.03402618	.0399137	.5227995

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
21-S	1.00000000	.70711000	.00001010	2D

SLAB CONFIGURATION - **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.10486523	.08557787	.05095357	.01647148	.04559919
4	.20811055	.16120025	.06561695	.03967680	.03373655
6	.12840087	.09048789	.02372080	.01384549	.01521266
8	.07325190	.03828590	.00963634	.00447991	.00507849
12	.01319668	.00573867	.00137640	.00058608	.00063579
16	.00182693	.00080401	.00025465	.00006621	.00006429
18	.00083864	.00030899	.00004424	.00003034	.00000229
20	.00024526	.00004679	.00000395	.00000498	.00000644
24	.00002030	.00000196			

INCHES	6	7	8	9	10
	.03770157	.06811990	.04494157	.28660666	.76637249
4	.03119550	.05380433	.03223648	.06280097	.02601761
6	.00945429	.02224357	.00708362	.02028064	.00522000
8	.00398952	.00594118	.00415103	.00788158	.00080251
12	.00044672	.00093090	.00028834	.00099374	.00010363
16	.00003335	.00011662	.00004200	.00004656	
18	.00001347	.00001970	.00000350	.00000718	
20		.00001197		.00000226	
24					

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
4	.06079653	.06644613	.03188453	.02230577	.01332243
6	.04338345	.03960546	.01273442	.00588222	.00963286
8	.03333854	.01984536	.00660494	.00248741	.00264412
12	.00696226	.00314100	.00087768	.00034753	.00040718
16	.00106125	.00044194	.00014157	.00005359	.00004396
18	.00037900	.00014078	.00002999	.00001852	.00000229
20	.00014926	.00004160	.00000395	.00000498	
24	.00002030	.00000196			

INCHES	6	7	8	9	10
4	.01390835	.03022121	.01835403	.04778644	.02120887
6	.00475743	.01409788	.00450230	.01723119	.00520005
8	.00181287	.00282690	.00269289	.00648559	.00069201
12	.00016370	.00065837	.00016750	.00083883	.00009949
16	.00002471	.00005972	.00002753	.00004371	
18	.00000839	.00001970		.00000718	
20		.00000519		.00000226	
24					

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.41420712	5.37398707	1.41420712	2.87631977
4	.20199999	.32623429	.46065128		.71439598
6	.10037489	.15702728	.18397850		.33594984
8	.04674995	.07943062	.07681207		.15349837
12	.00835934	.01366356	.01213665		.02429695
16	.00115620	.00189799	.00145244		.00325461
18	.00041209	.00060587	.00043475		.00126835
20	.00014257	.00020724	.00014418		.00032165
24	.00001172	.00002226	.00001378		.00002226

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
21-8	1000	2D	θφ	45.7990111

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
1.0000000	.7071100	.0000101	1.4142071	5.3739870

SLAB CONFIGURATION - **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

10.1600	5.0800	5.0800	10.1600	10.1600	5.0800
5.0800	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1	.0000098	.0000170	.0000029	.0539277	.0741512	.0124887
2	.0000019	.0000014	.0000002	.0542969	.0605130	.0093954
3				.0337500	.0360298	.0067319
4				.0118906	.0116472	.0027892
5				.0233770	.0322436	.0101822
6				.0242500	.0266592	.0098218
7				.0371250	.0481683	.0228165
8				.0262500	.0317786	.0183982
9				.1281250	.2026624	.1493302
10				.3480000	.5419096	.4848665

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1	.0000019	.0000037	.0000004	.1143184	.2183315	.0973764
2				.1047656	.2000871	.1142812
3	.0000039	.0000075	.0000011	.1130332	.2158770	.1233749
4				.0793125	.1514754	.0716708
5				.0735000	.1403743	.1412285
6	.0000019	.0000037	.0000009	.0601250	.1148300	.1083803
7				.0509219	.0972534	.0840541
8	.0000019	.0000037	.0000009	.0496250	.0947765	.0727903
9				.0281250	.0537147	.1788277
10				.0292656	.0558931	.1786885
11	.0000019	.0000037	.0000026	.0175000	.0334225	.0952341
12				.0205000	.0391520	.1222149

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.
.0000117	.0000032		.0000117	.0000184	.0000032	

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.7409922	1.0657629	.7268206	.4069299	.5930548	.0015547	.2574414

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
38.03405236		.5491690

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
22-S	2.00000000	1.00000000	.00001010	2C

SLAB CONFIGURATION CONCRETE

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.11485879	.10038670	.05952183	.05100594	.03421244
4	.34709699	.20578263	.15719040	.13030094	.10474901
6	.26725514	.24508809	.11520646	.06934568	.05809101
8	.17395968	.14209590	.07207891	.02765474	.03776220
12	.05154745	.03439858	.02059105	.01383895	.00776521
16	.01611998	.00862948	.00479987	.00230819	.00163567
18	.00777729	.00395624	.00141716	.00073096	.00097791
20	.00383494	.00182714	.00089297	.00046403	.00031657
24	.00025805	.00014050	.00005405		.00000824

INCHES	6	7	8	9	10
	.01734170	.08008989	.03274448	.10602858	.37841735
4	.06004687	.16928610	.08143296	.20410568	.24953719
6	.02261635	.09388369	.05374660	.10438693	.11831210
8	.01800084	.05210026	.03161752	.04505004	.05073476
12	.00478105	.01401048	.00961547	.00938073	.00838305
16	.00054232	.00198418	.00112539	.00110121	.00061642
18	.00024015	.00086582	.00024903	.00066620	.00013149
20	.00017846	.00044136	.00027610	.00018196	.00006833
24		.00004713	.00001866	.00000821	.00000827

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
4	.04393977	.04502426	.06000949	.02226913	.03587915
6	.06388580	.07773467	.04189878	.02295925	.02689169
8	.05350653	.05376883	.03008928	.01153950	.01416953
12	.01936626	.01326056	.00975246	.00623783	.00484519
16	.00708001	.00453774	.00202907	.00119047	.00089679
18	.00361500	.00208813	.00073750	.00016591	.00061777
20	.00174365	.00101044	.00042585	.00026070	.00021484
24	.00025805	.00014050	.00005405		.00000824

INCHES	6	7	8	9	10
4	.01930917	.07335053	.04270359	.08088344	.16955902
6	.01072188	.04179388	.02596798	.04999239	.07878451
8	.00793167	.02772460	.01414187	.02442580	.03802499
12	.00165620	.00772348	.00579035	.00580917	.00727899
16	.00013634	.00136112	.00049294	.00079642	.00061642
18	.00009133	.00055899	.00013318	.00056620	.00013149
20	.00011036	.00027214	.00012797	.00014164	.00006833
24		.00004713	.00001866	.00000821	.00000827

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.00000000	4.29230769	1.00000000	1.93145915
4	.47499999	.71392755	2.13775963	.12099999	1.83052878
6	.30799999	.48263084	1.13424311	.04199999	1.18993204
8	.18424993	.28932260	.58715327	.01400000	.66505485
12	.04924998	.08272048	.14643934	.00100001	.17531203
16	.01281249	.01913732	.02336466		.03886271
18	.00543749	.00870550	.01055912		.01701225
20	.00249996	.00437594	.00505303		.00848188
24	.00034374	.00054311	.00056641		.00054311

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
22-8	1000	20	2541	12.6325362

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
2.0000000	1.0000000	.0000101	1.0000000	4.0999999

SLAB CONFIGURATION **CONCRETE**

REGION THICKNESSES (CENTIMETERS)

10.1600	5.0800	5.0800	10.1600	10.1600	5.0800
5.0800	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1	.0001328	.0002827	.0000441	.0527500	.1148588	.0179291
2	.0001016	.0001402	.0000202	.0485000	.1003867	.0144459
3	.0000469	.0000537	.0000106	.0325000	.0595218	.0117592
4				.0312500	.0510059	.0161726
5	.0000078	.0000083	.0000036	.0200000	.0342124	.0150201
6				.0120000	.0173417	.0093053
7	.0000234	.0000680	.0000464	.0373125	.0800899	.0546955
8	.0000156	.0000186	.0000154	.0200000	.0327445	.0271540
9	.0000078	.0000083	.0000079	.0582500	.1060286	.1008564
10	.0000078	.0000083	.0000083	.2167500	.3784174	.3784174

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1	.0000313	.0001194	.0000197	.0457500	.1747517	.1313008
2	.0000625	.0002387	.0001033	.0387500	.1480138	.0984945
3	.0000625	.0001989	.0000530	.0580000	.1846193	.1503797
4	.0000156	.0000497	.0000247	.0542500	.1726827	.1506217
5	.0000391	.0001243	.0000461	.0427500	.1360772	.1092740
6	.0000391	.0001243	.0000272	.0377500	.1201617	.1156380
7			.0000001	.0412500	.1313025	.1235345
8	.0000234	.0000447	.0000234	.0540625	.1032515	.1209125
9	.0000234	.0000447	.0000122	.0412500	.0787815	.0960432
10	.0000156	.0000298	.0000098	.0475000	.0907181	.1321487
11				.0230000	.0439266	.0685604
12	.0000313	.0000149	.0000254	.0450000	.0214859	.0777670

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.
.0003438	.0001567		.0003438	.0005881	.0001567	.0000296

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.5293125	.9746077	.6457555	.2481205	.7518409	.0030078	.4673359

	MEAN ENERGY SCAT.TR.NT.	MEAN ENERGY REFL. NT.
41.04102618	.1725064	.9375200

RUN NUMBER	INC.ENERGY	COS. THETA	CUTOFF EGY.	ENERGY SET
31-S	2.00000000	.70711000	.00001010	2C

SLAB CONFIGURATION - **CONCRETE**

SCATTERED FLUX PER NEUTRON AT REGION BDS. IN ENERGY GRPS.

INCHES	1	2	3	4	5
	.10551927	.06645514	.06072523	.05964675	.04545551
4	.24440738	.20098220	.13232968	.12802397	.06987442
6	.22615649	.16783816	.08536174	.10040377	.07775974
8	.12418916	.08749798	.05372396	.04777298	.04467755
12	.04057688	.02522722	.01089704	.00484746	.00555228
16	.00820568	.00395631	.00167027	.00096631	.00059937
18	.00414731	.00193300	.00077765	.00061741	.00024403
20	.00170808	.00083744	.00023392	.00028510	.00008843
24	.00015187	.00009167	.00002346	.00000991	.00000399

INCHES	6	7	8	9	10
	.01435103	.07221619	.06598699	.14720852	.55669099
4	.02309556	.15027990	.08505894	.17914571	.22797243
6	.02976360	.06694312	.04515548	.08503556	.08393258
8	.01173024	.04943231	.03398518	.03268771	.02605737
12	.00208088	.00420225	.00356500	.00499138	.00359162
16	.00039131	.00088075	.00044729	.00077748	.00055971
18	.00015132	.00036538	.00014213	.00041392	.00023146
20	.00002096	.00016321	.00005885	.00020130	.00013078
24		.00002437	.00001717	.00001500	

SCATTERED FLUX TRANS. PER NT. IN EGY. GRPS. VS. THICKNESS

INCHES	1	2	3	4	5
4	.04705347	.04988007	.03890922	.04477009	.03039636
6	.04933031	.05568310	.02375193	.03886240	.02205336
8	.03797904	.02921629	.02116404	.01831135	.02651538
12	.01670976	.01323028	.00535361	.00147822	.00297054
16	.00402880	.00208414	.00092830	.00041516	.00028329
18	.00200942	.00094039	.00038887	.00030011	.00010107
20	.00085715	.00046963	.00011423	.00012643	.00005475
24	.00015187	.00009167	.00002346	.00000991	.00000399

INCHES	6	7	8	9	10
4	.01231320	.06602369	.03776695	.08661234	.15529114
6	.01231949	.03248253	.02287434	.05572526	.06127705
8	.00505180	.02769874	.02344689	.01780007	.02238878
12	.00123883	.00178598	.00188268	.00325740	.00314224
16	.00020765	.00059132	.00031472	.00043349	.00044541
18	.00006003	.00019141	.00005230	.00023706	.00021255
20	.00001665	.00010324	.00001695	.00010308	.00010723
24		.00002437	.00001717	.00001500	

INCHES	TOTAL NO. TRANS./NT.	TOTAL FLUX TRANS./NT.	TOTAL DOSE TRANS./NT.	UNC.NO.FLUX TRANS./NT.	TTL.FLX/NT. REGION BDS.
	1.00000000	1.41420712	6.07021212	1.41420712	2.55850577
4	.36799999	.63972688	1.83888745	.07071035	1.51188053
6	.23599999	.38991606	.91275899	.01555627	.98390651
8	.12800000	.23240080	.47731035	.00282841	.51458286
12	.03412496	.05104956	.06974689		.10553201
16	.00618748	.00973229	.01238342		.01845449
18	.00280458	.00449319	.00538006		.00902362
20	.00119527	.00196934	.00242046		.00372809
24	.00021874	.00033745	.00037847		.00033745

RUN NUMBER	HISTORIES	ENERGY SET	ANGLE SET	SLANT MFP
81-8	1000	2C	84	17.8650219

INC. ENERGY	COS. THETA	CUTOFF EGY	INC.FLX/NT	INC.DSE/NT
2.0000000	.7071100	.0000101	1.4142071	5.7982492

SLAB CONFIGURATION - CONCRETE

REGION THICKNESSES (CENTIMETERS)

10.1600	5.0800	5.0800	10.1600	10.1600	5.0800
5.0800	10.1600				

NUMBER OF SCATTERED NEUTRONS VS. ENERGY

ENERGY GROUPS	NO. TRAN. FACTOR	NO. FLUX TRAN.FACTOR	DOSE TRAN. FACTOR	NO. REFL. FACTOR	NO.FLX.REFL FACTOR	DOSE REFL. FACTOR
1	.0000938	.0001104	.0000172	.0559063	.0746137	.0116470
2	.0000547	.0000773	.0000112	.0375000	.0469911	.0067621
3	.0000156	.0000145	.0000029	.0314063	.0429394	.0084831
4	.0000078	.0000068	.0000022	.0361250	.0421768	.0133731
5	.0000039	.0000028	.0000013	.0280000	.0321421	.0141112
6				.0070000	.0101478	.0054451
7	.0000195	.0000164	.0000112	.0435000	.0510648	.0348735
8	.0000117	.0000122	.0000101	.0390000	.0466601	.0386937
9	.0000117	.0000116	.0000111	.0750000	.1040926	.0990149
10				.2710000	.3936418	.3936418

NUMBER OF SCATTERED NEUTRONS VS. ANGLE

ANGULAR SECTORS	NO. TRAN. FACTOR	NO. TRAN. FACT/STER	DOSE TRAN. FACT/STER	NO. REFL. FACTOR	NO. REFL. FACT/STER	DOSE REFL. FACT/STER
1	.0000703	.0001343	.0000239	.1026562	.1960585	.0978899
2	.0000273	.0000522	.0000203	.0782500	.1494461	.1054979
3	.0000352	.0000672	.0000135	.0842500	.1609053	.0899675
4	.0000313	.0000597	.0000203	.0651250	.1243793	.0730369
5	.0000156	.0000298	.0000138	.0511563	.0977010	.1092804
6	.0000039	.0000075	.0000016	.0610000	.1165011	.1270081
7	.0000078	.0000149	.0000031	.0653750	.1248568	.1162671
8	.0000117	.0000224	.0000128	.0581250	.1110103	.1088381
9	.0000039	.0000075	.0000045	.0190000	.0362872	.1184183
10	.0000039	.0000075	.0000048	.0111250	.0212471	.0801023
11	.0000039	.0000075	.0000045	.0122500	.0233957	.0742526
12	.0000039	.0000075	.0000048	.0161250	.0307964	.0950971

(S+U) NO. TRAN.FACT.	(S+U) DOSE TRAN. FACT.	UNSCAT. NO. FACTOR	SCAT. NO. TRAN. FACT.	SCAT.NO.FLX TRAN. FACT.	SCAT. DOSE TRAN. FACT.	SCAT. EGY. TRAN. FACT.
.0002188	.0000671		.0002188	.0002521	.0000671	.0000206

NUMBER REFL. FACT.	NO. FLUX REFL. FACT.	DOSE REFL. FACT.	ENERGY REFL. FACT.	ENERGY ABS. FACTOR	NUMBER ABS. FACTOR	NO. CUTOFF FACTOR
.6244375	.8444701	.6260456	.3173043	.6826643	.0030156	.3723281

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Neutrons - Reflection
Neutron fluxes - Transmission concrete
Neutrons - Shielding

Detailed calculated results on neutron reflection and flux versus depth for concrete are given in the form of machine printouts. The angular and energy distributions of the reflected neutrons along with the energy-dependent and total flux at various depths are contained in tabular form on the printouts. Neutron number current, number flux and dose transmission as functions of thickness are also given in tabular form on the printouts.

A table of summary information on reflection is presented. This contains number current, number flux, dose and energy reflection factors as functions of incident energy and angle.

A few figures are presented to illustrate graphically the meaning of the various tabular results.

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